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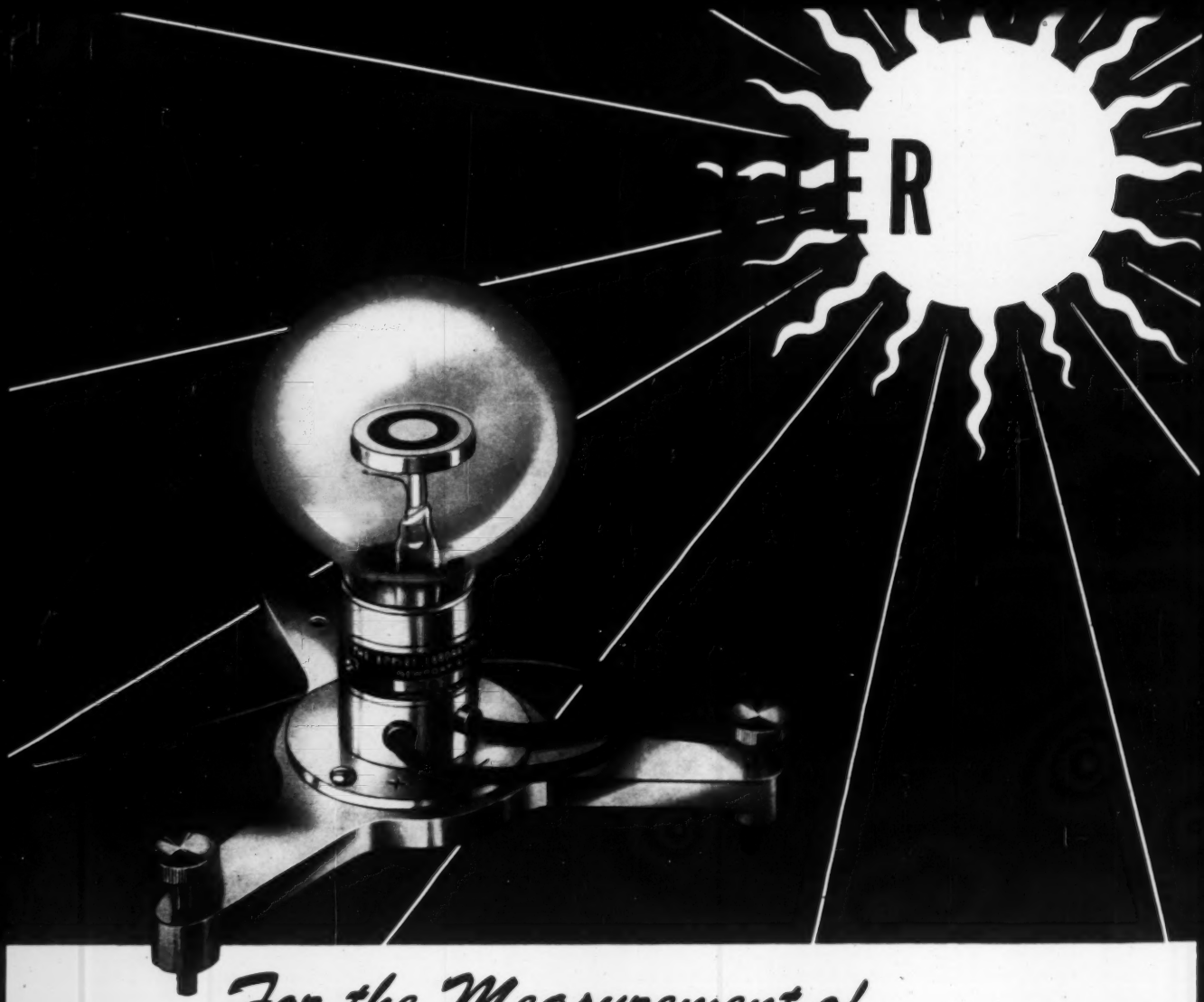

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NOVEMBER 1960

VOLUME 32, NUMBER 11

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about this

INSTRUMENTS AND CONTROL SYSTEMS

1961 BUYERS' GUIDE

THIS all-new 18th edition of the Guide incorporates several changes designed to make it more useful to you, the buyer of instruments and devices for measurement, inspection, testing, analysis, computing and automatic control.

About 2,500 companies cooperated to make this edition possible. Their returned questionnaires provide the basis for all the listings herein. Some 400 companies, by advertising herein, further supported this guide to all industry buyers of instruments, controls, systems, components and accessories.

In using this directory, you are urged to consult the advertisements. They're positioned to enable your quick reference—they contain valuable data which can save you time and correspondence in product selection and procurement.

First among the new features is the division of the main index section into nine separate departments. This enables more rapid location of suppliers products peculiar to particular applications. The Table of Contents on page one lists all of the separate sections and their locations. A "title page" precedes each section and describes the type of equipment covered.

A complete Product Index is also included in this edition. It contains all of the headings which appear in the nine catalog sections, plus "reference" headings to aid in location of specific items.

Recommended procedure for using the 1961 Buyers' Guide suggests that you look first in the *Product Index* (page 4) for the specific item in which you are interested—then turn to the catalog to which that item directs you. There you will find not only a list of the manufacturers and suppliers of the specific item, but also manufacturers of associated and allied equipments.

To find the addresses of the manufacturers and suppliers, then turn to the Directory of Manufacturers, at the back of the book. It will pay to contact more than one of the companies listed as sources for the item desired, as each has its specialties and specialized features.

Another new feature designed to facilitate your buying activities—for the first time, manufacturers' telephone numbers are included with their listings in the Directory of Manufacturers. Where no number is listed, none was provided by the manufacturer.

A valuable feature from last year's edition has also been retained this year. Manufacturers' representatives and sales offices are listed for those reps and manufacturers who purchased this service. It further helps you find close-to-home sources of supply, service, and information.

Throughout this directory, listings are by *basic variable*. Therefore, look for "pressure," "temperature," "flow," etc. DO NOT look for "instruments," "gages," "meters," "indicators," etc. An exception to this is the listing of certain general-purpose devices, such as "recorders."

This 1961 I&CS Buyers' Guide provides you a more complete and serviceable directory than any previous edition. But . . . as it is all-new, a few omissions will no doubt come to light. Your editors would much appreciate your reporting these so that the next edition may be that much closer to perfection.

PRODUCT INDEX

This PRODUCT INDEX will help you find the product listings in the several catalogs. All products are listed here in alphabetical order. First find the product in which you are interested; directly under the product you will see a catalog numbr. Turn to this catalog to find the names of the firms making that product. When you have the company names, turn to pages 207 to 237 to find the addresses for the companies.

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BOMBS, Specific Gravity, see Specific Gravity Bombs (Cat. 4)

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BOTTLES, Specific Gravity, see Specific Gravity Bottles (Cat. 4)

BOTTLES, Weighing, see Weighing Bottles (Cat. 4)

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BRAKES, Mechanical and Magnetic (Cat. 8)

BRIDGES, Balancing and Calibrating, Manual: AC.; Electrical, Capacitance; Electrical, Conductivity; DC; Hoopes; Impedance; Electric Inductance; Kelvin; Limit; Power-Factor; Strain Gage; Vacuum Tube; Wattmeter; Wheatstone (Cat. 3)

BRIDGES, Electrical, Self-balancing, see Potentiometers (Cat. 3)

BRINNELL Machines, see Hardness Testing Machines, Brinell (Cat. 6)

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BUBBLERS, see Sight Flow Bubblers (Cat. 1)

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CAPACITORS, Vacuum (Cat. 8)

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CARBON MONOXIDE METERS, see Gas Analyzers (Cat. 1)

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CIRCUITS, Potted, including Embedded Components (Cat. 8)

CIRCUITS and COMPONENTS, Plug-in (Cat. 8)

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CLIPS, Fahrenstock (Cat. 8)

CLIPS, Fuse, Grid, Test (Cat. 8)

CLOCKS, Master or Primary (Cat. 1)

CLOCKS, Minute Impulse and Synchronous (Cat. 1)

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CONDENSER Testers, see Boiler Room Instruments (Cat. 1), also Capacitance Indicators (Electrical)—Cat. 3

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CONNECTORS, including Plugs, Clips, Posts, Jacks, etc. (Cat. 8)

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CONSTANT SPEED AND FREQUENCY SETS, see Speed (Cat. 1) or Frequency (Cat. 3)

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DETECTORS, Carbon Monoxide, see Gas Analyzers (Cat. 1)

DETECTORS, Combustible Gas, see Gas Analyzers (Cat. 1)

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DETECTORS, Gas Including Methane and Mine Gases, see Gas Analyzers (Cat. 1)

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DETECTORS, Hydrogen Sulphide, see Gas Analyzers (Cat. 1)

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DIGITAL READOUT INDICATORS—Cat. 2, (See also Data Processing—Cat. 2)

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DILATOMETERS (Cat. 4)

DIMENSIONAL GAGES, Optical including Comparators, Interferometers, Micrometers, Projectors, Telescopic (Cat. 6)

DIMENSIONAL GAGES, Electronic, including Comparators, Micrometers (Cat. 6)

DIMENSIONAL GAGES, Mechanical, including Adjustable Length, Bore, Caliper, Center, Coating Thickness, Concentricity, Cylinder, Dial, Drill Grinding, End Measure, Foot Blocks, Gage Blocks, Height, Linear, Depth, Micrometer, Pipe, Piston Ring, Plug, Pneumatic, Profile, Radius, Taper, Thickness, etc. (Cat. 6)

DIMENSIONAL GAGES, Pneumatic, including Comparators (Cat. 6)

DIMENSIONAL GAGES, Running Length including Wire, Cable, and Flexible Material (Cat. 6)

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DIODES, Silicon (Cat. 8)

DIRECTION INDICATORS, Radiooctuated—Cat. 5, (see also Aircraft Instruments, also Navigation Aids—(Cat. 5)

DISPLACEMENT INDICATORS, and/or RECORDERS, Angular and Nonlinear and Motion (Cat. 1)

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DUROMETERS, see Hardness Testing Machines (Cat. 6)

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DUST-FREE WORK ENCLOSURES & ACCESSORIES, including Rooms, Sterile Cabinets, Pre-entry Showers, Tread Mats, etc. (Cat. 1)

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ELECTRIC WAVE FILTER SECTIONS, see Filters, Frequency (Cat. 8)

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ENGINE COMPRESSION INDICATORS, see Engine Test Instruments (Cat. 6)

ENGINE GOVERNORS, including Internal Combustion Engines, Steam Turbines, etc. (Cat. 1)

ENGINE INDICATORS, see Engine Test Instruments (Cat. 6)

ENGINE TEST INSTRUMENTS, including Ignition Analyzers, Compression Indicators, etc. (Cat. 6)

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ENGRAVING OF GLASS, see Machines, Engraving (Cat. 9)

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FAULT LOCATORS, Communication and Lines, Electrical Resistance (Cat. 3)

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FEEDERS, Automatic Proportioning, including Granular Material (Cat. 1)

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FILTERS, Band Elimination and/or Band Pass (Cat. 8)

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FLOWMETERS, Area, Orifice and Plug Type (Cat. 1)

FLOWMETERS, Electro-Magnetic, including Turbine (Cat. 1)

FLOWMETERS, Inferential Type, including Orifice, Nozzle, Pitot, Venturi; for Air, Gas, Liquid or Steam; Indicating and/or Recording (Cat. 1)

FLOWMETERS, Magnetic (Cat. 1)

FLOWMETERS, Open Channel, including Flume, V-notch, Weir (Cat. 1, (see also Waste—Cat. 1)

FLOWMETERS, Positive Displacement, including Consumer Gas, Nutating Pistons or Disc, Oscillating Piston, Propeller, Reciprocating Piston and Rotary Piston, Water Meters, etc. (Cat. 1)

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GAGES, Wind, see Meteorological Instruments (Cat. 5)

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GAS ANALYZERS, Ammonia (Cat. 1)

GAS ANALYZERS, Carbon Dioxide, and/or Carbon Monoxide (Cat. 1)

GAS ANALYZERS, Flue Gas, see Gas Analyzers, CO, O_2, etc. (Cat. 1)

GAS ANALYZERS, Hydrogen, Hydrogen Sulphide, Nitric Oxide, etc. (Cat. 1)

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GAS DISTRIBUTION SYSTEM INSTRUMENTS, including Gas Station Meters, Pipe Line Instrumentation, Pressure Regulators, Station Instrumentation, etc. (Cat. 1)

GAS LEAK INDICATORS, see Leak (Cat. 1)

GAS METERS, see Flowmeters (Cat. 1)

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GEARS, Precision, including Gear Trains, Gear Hubs, Pinions, etc. (Cat. 8)

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GLASS, Photosensitive (Cat. 9)

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GLASS TUBING, Heat Resisting (Cat. 9)

GLASS TUBING, Precision Bore (Cat. 9)

GLASS TUBING, Ultraviolet Transmitting, including Opaque to Visible Lighting (Cat. 9)

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RELAYS, Mercury Tube (Cat. 8)

RELAYS, Motor Driven, Time Delay (Cat. 8)

RELAYS, Movable Coil, AC (Cat. 8)

RELAYS, Overload (Cat. 8)

RELAYS, Permanent-Magnet Movable Coil (D'Arsonval Type) —Cat. 8

RELAYS, Photoelectric (Cat. 8)

RELAYS, Pneumatic (Cat. 8)

RELAYS, Polarized (Cat. 8)

RELAYS, Power (Cat. 8)

RELAYS, Sensitive (Cat. 8)

RELAYS, Stepping (Cat. 8)

RELAYS, Subminiature (Cat. 8)

RELAYS, Telephone, Auxiliary Ringing (Cat. 8)

RELAYS, Temperature (Cat. 8)

RELAYS, Temperature-compensated (Cat. 8)

RELAYS, Time Delay (Cat. 8)

RELAYS, Transformer, Low Voltage (Cat. 8)

RELAYS, Vacuum Contact (Cat. 8)

RELAYS, Vacuum Tube, see Relays, Electronic (Cat. 8)

RELAYS, Vibrating Reed Type (Cat. 8)

RELIEF VALVES, see Valves, Relief (Cat. 1)

REMOTE-CONTROL EQUIPMENT, see Telemetering (Cat. 1)

REMOTE-METERING EQUIPMENT, Electrical, see Telemetering (Cat. 1)

REMOTE-METERING EQUIPMENT, Pneumatic, see Pressure Transmitters (Cat. 1)

RESISTANCE BOXES, including Decade, Dividing, etc. (Cat. 3)

RESISTANCE COMPARATORS (Cat. 3)

RESISTANCE INDICATORS, Ground, Insulation, Megohm, Milliohm, Ohm (Cat. 3)

RESISTANCE RATIO BOXES (Cat. 3)

RESISTANCE STANDARDS, see Standards (Cat. 3)

RESISTANCE THERMOMETERS, see Thermometers, Electrical Resistance (Cat. 1)

RESISTANCE WIRE (Cat. 9)

RESISTOR BOBBINS, Precision, Ceramic (Cat. 9)

RESISTOR CORES, Ceramic (Cat. 9)

RESISTOR STANDARDS, see Standards (Cat. 3)

RESISTORS, Adjustable (Cat. 8)

RESISTORS, Ballast (Cat. 8)

RESISTORS, Carbon Composition and/or Variable (Cat. 8)

RESISTORS, Decade (Cat. 3)

RESISTORS, Deposited Carbon (Cat. 8)

RESISTORS, Encapsulated (Cat. 8)

RESISTORS, High Frequency (Cat. 8)

RESISTORS, High Megohm (Cat. 8)

RESISTORS, High Voltage (Cat. 8)

RESISTORS, Manganin (Cat. 8)

RESISTORS, Molded (Cat. 8)

RESISTORS, Negative Temperature Coefficient (Cat. 8)

RESISTORS, Non-Inductive (Cat. 8)

RESISTORS, Precision (accuracy better than 1%)—Cat. 8

RESISTORS, Tape (Cat. 8)

RESISTORS, Temperature Sensitive, see Thermistors (Cat. 8)

RESISTORS, Voltage Sensitive, see Varistors (Cat. 8)

RESISTORS, Wire Wound (2 watts and under) —Cat. 8

RESISTORS, Wire Wound (2 to 500 watts)—Cat. 8

RESISTORS, Wire Wound (500 to 1,000 watts)—Cat. 8, (see also Rheostats—Cat. 8)

RESISTORS, Woven (Cat. 8)

RESOLVERS, see Synchros (Cat. 8)

RETICLES (Cat. 8)

REVOLUTION COUNTERS, see Counters, also Tachometers (Cat. 1)

RHEOSTATS, Field (Cat. 8)

RHEOSTATS, Laboratory and/or Meter Testing (Cat. 4)

RHEOSTATS, Slide Wire and Variable—Cat. 8, (see also Resistors —Cat. 8)

RIBBON, Metal, Rolled to Small Fractional Dimensions (Cat. 9)

RINGS, COLLECTOR, see Slip Rings (Cat. 9)

RODS, Pinion, Drawn Shapes (Cat. 9)

RODS, Platinum and Precious Metals (Cat. 9)

RUBBER TESTING MACHINES and INSTRUMENTS (Cat. 6)

RULES, including Aluminum, Brass, Stainless Steel and Steel (Cat. 7)

RULES, Adjustable Curve, see Drawing Instruments (Cat. 7)

RULES, Caliper, see Dimensional Gages, Mechanical (Cat. 6)

RULES, Drafting Room, see Drawing Instruments (Cat. 7)

RULES, Glass (Cat. 9)

RULES, Precision Standard (Cat. 7)

RULES, Slide, see Sliderules (Cat. 7)

RUNNING TIME RECORDERS, see Time Recorders (Cat. 1)

RUPTURE DISCS, see Pressure Relief (Cat. 1)

SACCHARIMETERS (Cat. 4)

SACCHAROMETERS (Cat. 4)

SAFETY VALVES, see Valves, Relief (Cat. 1)

SALINITY INDICATORS (Cat. 4)

SALINOMETERS, see Salinity (Cat. 4)

SALT SPRAY TESTERS see Environmental Test Chambers (Cat. 1)

SAMPLERS, Air, see Air Pollution (Cat. 4)

SAMPLERS, Boiler Water, see Boiler Room Instruments (Cat. 1), also Water Analysis (Cat. 4)

SAMPLERS, Miscellaneous (Cat. 4)

SAMPLERS, Sewage, see Waste Treatment Cat. 1)

SAPPHIRE BOULES (Cat. 9)

SAPPHIRE RODS, see Sapphire (Cat. 9)

SAPPHIRE, Special Shapes and Parts, Balls, Rods, Styli (Cat. 9)

SATURABLE REACTORS, see Amplifiers (Cat. 3)

SAUNDERS PATENT VALVES, see Valves, Diaphragm Seal, including Saunders Patent, Crane, Wynn Type, etc. (Cat. 1)

SAWS, Jewelers' Type, see Jewelers (Cat. 9)

SCALERS, Decade, see Counters, Decade (Cat. 3)

SCALERS, Geiger-Mueller, see Counters, Geiger-Mueller, Also Radioactivity (Cat. 4)

SCALES, Drawing, see Drawing Instruments (Cat. 7)

SCALES, Instrument (Cat. 8)

SCALES, WEIGHING see Weighing Scales (Cat. 1)

SCANNERS (Cat. 1)

SCINTILLATION COUNTERS, see Counters, Scintillation (Cat. 4)

SCRATCH HARDNESS TESTING MACHINES (Cat. 6)

SCREENS, X-Ray, Fluoroscopic, including Intensifying (Cat. 4)

SCREW DRIVERS, Instrument (Cat. 9)

SCREW DRIVERS, Torque, see Wrenches, Torque (Cat. 9)

SCREW MACHINES, see Machines, Screw (Cat. 9)

SCREW THREAD GAGES, see Dimensional Gages (Cat. 6)

SCREWS, Instrument (Cat. 9)

SCREWS, Lead, Precision (Cat. 9)

SCREWS, Stainless Steel (Cat. 9)

SEGER CONES, see Pyrometric Cones (Cat. 1)

SEISMOLOGICAL INSTRUMENTS, including Seismographs (Cat. 5)

SERVO SYSTEM ANAYLZERS (Cat. 5)

SERVO VALVES, Hydraulic (Cat. 1)

SERVOMECHANISMS, including Servo Systems, Kits—Cat. 5, (see also Servomotors —Cat. 5, also Clutches, and Gears—Cat. 8)

SERVOMECHANISMS, Digital, including Digital Positioners (Cat. 5)

SERVOMOTORS, Electric Motor and/or Solenoid (Cat. 5)

SERVOMOTORS, Hydraulic, Mechanical, and Pneumatic (Cat. 5)

SEXTANTS, see Navigational Instruments (Cat. 5)

SHAFTING, Flexible (Cat. 9)

SHAKE TABLES, see Vibration Test (Cat. 1)

SHEETS, Beryllium Copper, Brass, Bronze, Copper (Cat. 9)

SHEETS, Columbium, Molybdenum (Cat. 9)

SHIELDING, MAGNETIC, see Magnetic (Cat. 8)

SHIELDS, Lead (Cat. 9)

SHIELDS, Transformer (Cat. 9)

SHIELDS, Tube (Cat. 9)

SHIP LOGS, see Marine Instruments (Cat. 5)

SHIPBORNE INSTRUMENTS, see Marine Instruments (Cat. 5)

SHOCK MOUNTINGS, see Mountings (Cat. 8)

SHUNTS, Electric (Cat. 3)

SHUT-OFF VALVES, see Valves, Relief (Cat. 1)

SIEVE SHAKERS, (Cat. 6)

SIEVES, Testing (Cat. 6)

SIGHT FLOW BUBBLERS (Cat. 1)

SIGHT FLOW INDICATORS, see Flowmeters, Sight (Cat. 1)

SIGHTS, Gun, Telescopic (Cat. 5)

SIGNAL GENERATORS, see Generators (Cat. 8)

SIGNAL LIGHTS, see Pilot Lights (Cat. 8)

SIGNALING DEVICES, Automatic, see Monitors (Cat. 1)

SILICA Fused and/or Vitreous (Cat. 9)

SILVER, see Precious Metals (Cat. 9)

SIMULATORS, Flight including Flight Tables (Cat. 5)

SINE BARS, see Dimensional Gages (Cat. 6)

SLIDERULES, Engineering Calculation (Cat. 7)

SLIP RINGS (Cat. 9)

SMOKE DENSITY INDICATORS and/or RECORDERS (Cat. 1)

SMOOTHNESS RECORDERS, see Dimensional Gages, Surface (Cat. 6)

SNUBBERS, see Pressure Snubbers (Cat. 1)

SOCKETS, Lamp, Printed Circuit, Transistor, Tube, and Turret (Cat. 9)

SOCKETS, Thermometer, see Thermowells (Cat. 1)

SOFTNESS TESTERS (Cat. 6)

SOIL TESTERS (Cat. 6)

SOLAR BATTERIES, see Batteries, Solar (Cat. 8)

SOLDERING EQUIPMENT, Including Resistance Type (Cat. 9)

SOLDERS, Gold and/or Silver (Cat. 9)

SOLDERS, Hard (Cat. 9)

SOLDERS, Soft (Cat. 9)

SOLDERS, Special, including Flux-filled (Cat. 9)

SOLENOIDS—Cat. 8, (see also Relays—Cat. 8)

SOLENOIDS, Rotary (Cat. 8)

SOLENOIDS, Subminiature (Cat. 8)

SORTING EQUIPMENT, including Gaging (Cat. 6)

SOUND ANALYZERS, including Noise (Cat. 3)

SOUND INDICATORS, including Noise Indicators and Noise Measuring Sets (Cat. 3)

SOUND LEVEL INDICATORS, including db Meters (Cat. 3)

SOUND PICKUPS, see Microphones (Cat. 8)

SOUND STANDARDS, see Standards, Sound (Cat. 3)

SOUNDING MACHINES AND LEADS (Cat. 5)

SOUNDING TUBES (Cat. 5)

SPARK PLUG TESTERS, see Engine Test (Cat. 6)

SPECIFIC GRAVITY BALANCES (Cat. 4)

SPECIFIC GRAVITY BOMBS (Cat. 4)

SPECIFIC GRAVITY BOTTLES (Cat. 4)

SPECIFIC GRAVITY CONTROLLERS, INDICATORS and RECORDERS (Cat. 1)

SPECTROGRAPHS (Cat. 4)

SPECTROMETERS (Cat. 4)

SPECTROMETERS, Infrared, Mass (Cat. 4)

SPECTROMETERS, X-ray, see Spectrographs (Cat. 4)

SPECTROPHOTOMETERS (Cat. 4)

SPECTROPHOTOMETERS, Ultraviolet (Cat. 4)

SPECTROSCOPES (Cat. 4)

SPECTROSCOPES, Quartz (Cat. 4)

SPECTROSCOPES, Stellar (Cat. 4)

SPECTRUM ANALYZERS, AF (Cat. 3)

SPECTRUM ANALYZERS, RF including Panoramic Adapters (Cat. 3)

SPECTRUM ANALYZERS, Optical (Cat. 4)

SPEED INDICATORS, RECORDERS and REGULATORS, including Speed Switches (Cat. 1)

SPEED REDUCERS and SPEED INCREASERS (Cat. 1)

SPEED SYNCHRONIZING INDICATORS (Cat. 1)

SPEEDOMETERS, see Speed (Cat. 1)

SPHEROMETERS (Cat. 6)

SPHYGMOMANOMETERS (Cat. 4)

SPIDER SILK (Cat. 9)

SPRING TESTING MACHINES (Cat. 6)

SPRINGS, Compression and Tension (Cat. 9)

SPRINGS, FLAT (Cat. 9)

SPRINGS, Glass (Cat. 9)

SPRINGS, Hair and Hair Assemblies (Cat. 9)

SPRINGS, Helical (Cat. 9)

SPRINGS, Torsion (Cat. 9)

SPRINGS, Watch (Cat. 9)

SQUARE WAVE GENERATORS, see Generators (Cat. 3)

STANDARD CELLS (Cat. 8)

STANDARDS, Acoustic (Cat. 3)

STANDARDS, Capacitance (Cat. 3)

STANDARDS, Color (Cat. 4)

STANDARDS, Emf, see Standard Cells (Cat. 8)

STANDARDS, Frequency, Inductance, Resistance, Shunt (Cat. 3)

STANDARDS, Gamma-Ray, see Standards, Radioactivity (Cat. 4)

STANDARDS, Length (Cat. 6)

STANDARDS, Mass (Cat. 7)

STANDARDS, Pressure (Cat. 7)

STANDARDS, Radioactivity (Cat. 4)

STANDARDS, Sound Level (Cat. 3)

STANDARDS, Surface Roughness and/or Finish (Cat. 6)

STANDARDS, Temperature (Cat. 7)

STANDARDS, Time (Cat. 7)

STANDARDS, Volume (Cat. 7)

STATIC ELECTRICITY GENERATORS (Cat. 3)

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STATION CONTROL EQUIPMENT, see Electric Power Generation Instruments, also Gas Distribution System Instruments (Cat. 1)

STEAM GOVERNORS, see Boiler Room Instruments (Cat. 1)

STEAM METERS, see Flowmeters, Inferential Type (Cat. 1)

STEAM SPECIALTIES, see Boiler Room Instruments (Cat. 1)

STELLAR SPECTROSCOPES, see Spectroscopes, Stellar (Cat. 4)

STEROSCOPES (Cat. 4)

STIFFNESS TESTERS, Paper, see Paper Testing (Cat. 6)

STILLS, Water (Cat. 4)

STIRRERS, Laboratory, Variable Speed (Cat. 4)

STRAIGHT EDGES (Cat. 6)

STRAIGHTENING VANES (Cat. 1)

STRAIN GAGES, including Bonded and Unbonded Resistance Type (Cat. 1)

STRAIN-RATE AND STRESS-RATE CONTROLLERS (Cat. 1)

STRAIN TESTERS, Glass, see Glass Test Instruments (Cat. 6)

STRAIN-TIME RECORDERS (Cat. 1)

STEAM GAGING INSTRUMENTS, see Hydrologic Instruments (Cat. 5)

STRESS-STRAIN ANALYZERS, INDICATORS and/or CONTROLLERS (Cat. 1)

STRIP-CHART RECORDERS, see Recorders, also Object of Measurement (Cat. 2)

STROBOSCOPES (Cat. 1)

SULPHUR DIOXIDE INDICATORS, and/or **RECORDERS**, see Gas Analyzers (Cat. 1)

SUNSHINE INDICATORS and/or RECORDERS (Cat. 5)

SUPERVISORY CONTROL EQUIPMENT and SYSTEMS, see Control Systems, also Telemetering (Cat. 1)

SUPPORTS, Cable and Tubing, see Tubing Support (Cat. 9)

SURFACE FINISH INSTRUMENTS, see Dimensional Gages, Surface (Cat. 6)

SURFACE FINISH SPECIMENS, see Standards, Surface Finish (Cat. 6)

SURFACE PLATES, Glass (Cat. 6)

SURFACE PLATES, Stone (Cat. 6)

SURFACE TENSION INSTRUMENTS (Cat. 4)

SURVEYING INSTRUMENTS, including Aneroid Type (Cat. 7)

SURVEYING INSTRUMENTS, Underground, for wells or bore holes —Cat. 7, (see also Geophysical Instruments—Cat. 7)

SURVEYOR CHAINS, see Surveying Instruments (Cat. 7)

SWITCHES, Air Operated (Cat. 8)

SWITCHES, Instrument, including Wiping, Selecting, etc. (Cat. 8)

SWITCHES, Magnetic (Cat. 8)

SWITCHES, Mercury (Cat. 8)

SWITCHES, Pressure and Vacuum (Cat. 8)

SWITCHES, Pyrometer (Cat. 8)

SWITCHES, Rotary, including Shaft Motion Types (Cat. 8)

SWITCHES, Sealed (Cat. 8)

SWITCHES, Snap Action (Cat. 8)

SWITCHES, speed, see Speed (Cat. 1)

SWITCHES, Stepping, including Motors, Step Type—Cat. 8, (see also Relays—Cat. 8)

SWITCHES, Thermostatic (Cat. 8)

SWITCHES, Time (Cat. 8)

SYNCHROS, including Transmitters, Receivers, Differentials, Control Transformers, Receivers —Cat. 8, (see also Servomotors—Cat. 5)

SYNCHROSCOPES (Cat. 3)

TACHOGRAPHS (Cat. 1)

TACHOMETER TESTERS (Cat. 6)

TACHOMETERS, Centrifugal (Cat. 1)

TACHOMETERS, Chronometric (Cat. 1)

TACHOMETERS, Electric and Electromagnetic (Cat. 1)

TACHOMETERS, Miscellaneous, including Cross Pendulum, Fly-ball, Ignition actuated, Tiltingring—Cat. 1, (see also Frequency—Cat. 3)

TACHOMETERS, Recording (Cat. 1)

TACHOMETERS, Speed Limit Control (Cat. 1)

TACHOMETERS, Stroboscopic (Cat. 1)

TACHOMETERS, Vibrating Reed (Cat. 1)

TACHOSCOPES (Cat. 1)

TAFFRAIL LOGS, Ship, see Marine Instruments (Cat. 5)

TAPE, Magnetic Recording (Cat. 2)

TAPE RECORDERS, see Recorders, Magnetic Tape (Cat. 2)

TAPES, Pressure Sensitive, including Symbols (Cat. 9)

TAPES, Steel—Cat. 6, (see also Dimensional Gages—Cat. 6)

TAPES, Surveyor, see Surveying Instruments (Cat. 7)

TELEGRAPHY, Automatic, including Reperforators, Tape Perforators, Tape Transmitters, Teleprinters, Teletypers (Cat. 2)

TELEMETERING SYSTEMS, Electrical, including Remote-Control Equipment (Cat. 1)

TELEMETERING SYSTEMS, Pneumatic (Cat. 1)

TELEMETERING SYSTEMS, RF, including Microwave, Radio Remote Control (Cat. 1)

TELEMETERS, Surveying and Military, Optical (Cat. 5)

TELESCOPES, Alignment (Cat. 6)

TELESCOPES, Astronomical (Cat. 5)

TELESCOPES, Azimuth and/or Refracting

TELESCOPES, Bore and Internal Surface, Inspection (Cat. 6)

TELESCOPES, Laboratory (Cat. 4)

TELESCOPES, Reflection and/or Refracting (Cat. 5)

TELEVISION, Industrial (Cat. 1)

TEMPERATURE ALARM SYSTEMS (Cat. 1)

TEMPERATURE CALIBRATION EQUIPMENT (Cat. 1)

TEMPERATURE CONTROLLERS and REGULATORS (Cat. 1)

TEMPERATURE, INSTRUMENTS, see Thermometers, also Pyrometers (Cat. 1)

TEMPERATURE SENSITIVE PAINT AND CRAYONS (Cat. 1)

TEMPERATURE STANDARDS, see Standards, Temperature (Cat. 7)

TENDERNESS TESTERS, see Softness Testers (Cat. 6)

TENSILE TEST MACHINES, see Testing Machines (Cat. 6)

TENSIOMETERS (Cat 6)

TENSION INDICATORS —Cat. 6, (see also Textile Test Instruments —Cat. 6)

TERMINALS, Blocks, Boards, and Shapes (Cat. 8)

TERMINALS, Hermetic (Cat. 8)

TEST CHAMBERS, see Environmental Test Chambers (Cat. 1)

TEST CLIPS, see clips (Cat. 8)

TEST SETS, Diode, see Diode Test Sets (Cat. 3)

TEST WEIGHTS, see Weights and Measures (Cat. 7)

TESTERS, see the Object of Test

TESTERS, AIR Speed Indicators, see Aircraft Instrument Testers (Cat. 5)

TESTERS, Altimeters, see Aircraft Instrument Testers (Cat. 5)

TESTERS, Condenser, see Capacitance Indicators (Electrical—Cat. 3, or Boiler Room Instruments (Process) Cat. 1

TESTERS, Deadweight, see Pressure Instrument Calibrators, Deadweight (Cat. 6)

TESTERS, Dew Point, see Humidity Instruments (Cat. 1)

TESTERS, Fuel, see Gas Analyzers (Cat. 1), Coal Test, etc. (Cat. 4)

TESTERS, Moisture, see Moisture (Cat. 4), also Environmental Test (Cat. 1)

TESTERS, Mullen, see Bursting Testing (Cat. 6)

TESTERS, Non-destructive, Electrical, for Physical Properties (Cat. 6)

TESTING MACHINES, Bursting, see Bursting Testing Machines (Cat. 6)

TESTING MACHINES, Fatigue, see Fatigue (Cat. 6)

TESTING MACHINES, Glass Strain, see Glass Test (Cat. 6)

TESTING MACHINES, Gummed Tape, Paper, see Paper Test (Cat. 6)

TESTING MACHINES, High Pressure, see Bursting Testing Machines (Cat. 6)

TESTING MACHINES, Knit Goods, see Textile Testing (Cat. 6)

TESTING MACHINES, Leather, see Leather Testing (Cat. 6)

TESTING MACHINES, Miscellaneous, including Alternating Stress, Bending, Compression, Creep, Deflection, Ductility, Impact, Pendulum, Stiffness and Bending, Stretch, etc.—Cat. 6, (see also Testing Machines, Universal—Cat. 6)

TESTING MACHINES, Paper, see Paper Testing (Cat. 6)

TESTING MACHINES, Vibration, see Vibration (Cat. 1)

TESTING MACHINE (UNIVERSAL) CALIBRATORS, including Proving Rings (Cat. 6)

TESTING MACHINES, Universal, Dead Weight Beam (Cat. 6)

TESTING MACHINES, Universal, Hydraulic (Cat. 6)

TESTING MACHINES, Universal, Spring Dynamometer (Cat. 6)

TESTING MACHINES, Wire, see Wire Testing (Cat. 6)

TESTING SETS, see the Object of Measurement and Test

TESTING SETS, Electrical see Circuit Testers (Cat. 3)

TESTING SETS, Meters, Electrical, see Electrical Instrument Calibrators (Cat. 3)

TESTING SETS, Water, see Water Analysis (Cat. 4)

TEXTILE TEST INSTRUMENTS and MACHINES (Cat. 6)

THEODOLITES, Magnetic (Cat. 5)

THEODOLITES, Pilot Balloon (Cat. 5)

THERMISTORS (Cat. 8)

THERMO-AMMETERS, see Ammeters (Cat. 3)

THERMOCOUPLE EXTENSION WIRE in Multiple Pair Cables (Cat. 8)

THERMOCOUPLE INSULATORS (Cat. 8)

THERMOCOUPLE WELLS, see Thermowells (Cat. 1)

THERMOCOUPLE WIRE and COMPONENTS, including Extension Lead Wire (Cat. 8)

THERMOCOUPLES, Base Metal—Cat. 1, (see also Wire, Thermocouple —Cat. 9)

THERMOCOUPLES, Contact Type—Cat. 1, (see also Thermometers, Surface—Cat. 1)

THERMOCOUPLES, Immersion (Cat. 1)

THERMOCOUPLES, Rare Metal (Cat. 1)

THERMOCOUPLES, Vacuum, (Cat. 8)

THERMOELECTRIC DEVICES (Cat. 8)

THERMOHYDROMETERS, see Hydrometers (Cat. 4)

THERMOMETER TESTERS, see Temperature Calibration (Cat. 1)

THERMOMETER TEST WELLS, see Thermowells (Cat. 1)

THERMOMETER TUBES, see Thermowells (Cat. 1)

THERMOMETERS, Dial, Bimetal (Cat. 1)

THERMOMETERS, Dial, Gas, Mercury, Organic Liquids filled, or Vapor-pressure (Cat. 1)

THERMOMETERS, Electrical Resistance, Indicating, Recording and or Controlling (Cat. 1)

THERMOMETERS, Indicating, Glass, including Mercury, Spirit (Cat. 1)

THERMOMETERS, Indicating, Pressure-spring (Cat. 1)

THERMOMETERS, Maximum and Minimum Registering (Cat. 1)

THERMOMETERS, Recording and/or Controlling, Filled Systems (Cat. 1)

THERMOMETERS, Surface (Cat. 1)

THERMOMETERS, Thermistor—Cat. 1, (see also Thermistors —Cat. 8)

THERMOPILES, see Radiation Pickups (Cat. 4)

THERMOSTATIC ELEMENTS and Metals, including Bimetallic Materials, Springs, Strips, Fabricated Parts, etc. (Cat. 9)

THERMOSTATS (Cat. 1)

THERMO-VOLTMETERS, see Voltmeters, Thermo (Cat. 3)

THERMOWELLS (Cat. 1)

THICKNESS GAGES (Cat. 6)

THICKNESS GAGES, Radiation (Cat. 6)

THICKNESS GAGES, Ultrasonic (Cat. 6)

THREAD GAGES, see Dimensional Gages (Cat. 6)

THREAD MEASURING WIRES, see Wires, Thread Measuring (Cat. 6)

THYRATRONS, see Tubes, Thyratron (Cat. 8)

TIDE GAGES, see Hydrologic Instruments (Cat. 5)

TIME CONTROLLERS, see Timers (Cat. 1)

TIME INDICATORS, see Clocks, also Watches, (Cat. 1)

TIME INTERVAL APPARATUS, see Counters, also Timers (Cat. 1)

TIME RECORDERS, including Running Time, Time Operation, Time Totalizers, etc. (Cat. 1)

TIME STUDY APPARATUS (Cat. 1)

TIMERS, including Automatic Reset, Cycle Interval—Cat. 1, (see also Program Controllers—Cat. 1)

TIMERS, Microsecond—Cat. 1, (see also Counters, Electronic—Cat. 1)

TIN RIBBON, Block (Cat. 9)

TITRATION APPARATUS, Electrometric (Cat. 4)

TITRATION APPARATUS, Manual (Cat. 4)

TITROMETERS (Cat. 4)

TONG AMMETERS, see Ammeters (Cat. 3)

TOOLMAKER'S FLATS (Cat. 6)

TOOLS, Precision (Cat. 9)

TOPOGRAPHIC INSTRUMENTS, see Surveying Instruments (Cat. 7)

TORQUE CONTROL EQUIPMENT and GAGES (Cat. 1)

TORQUE TESTERS (Cat. 6)

TORQUE WRENCHES, see Wrenches (Cat. 9)

TOTALIZERS, Demand (Cat. 1)

TOTALIZERS, Electric Energy (Cat. 1)

TOTALIZERS, Fluid Flow and or Gas Flow, see Flow Totalizers (Cat. 1)

TOTALIZERS, Running Time, see Time Recorders (Cat. 1)

TRANSDUCERS, Note: A transducer converts one form of POWER into another. For numerous primary measuring devices see the correct headings under the measurables; e.g. Displacement Pickups, Flow Pickups, Pressure Pickups, etc.

TRANSDUCERS, Ultrasonic (Cat. 8)

TRANSFORMERS, Ajustable, see Transformers, Variable (Cat. 8)

Transformers, Constant Voltage—Cat. 8, (see also Voltage Regulators —Cat. 3)

TRANSFORMERS, Differential, see Displacement Pickups, Differential Transformers (Cat. 1)

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TRANSFORMERS, High Frequency (Cat. 8)

TRANSFORMERS, Impedance (Cat. 8)

TRANSFORMERS, Input, Output, and Interstage, including AF, IF, and RF (Cat. 8)

TRANSFORMERS, Instrument including Current, and/or Potential, Laboratory (Cat. 8)

TRANSFORMERS, Insulation Testing (Cat. 8)

TRANSFORMERS, Isolation (Cat. 8)

TRANSFORMERS, Microwave (Cat. 8)

TRANSFORMERS, Phasing (Cat. 8)

TRANSFORMERS, Power (Cat. 8)

TRANSFORMERS, Pulse (Cat. 8)

TRANSFORMERS, Saturable, see Amplifiers (Cat. 3)

TRANSFORMERS, Ultrasonic (Cat. 8)

TRANSFORMERS, Variable, including Voltage Testing, and Autotransformers (Cat. 8)

TRANSFORMERS, Voltage Regulating, see Transformers, Constant Voltage (Cat. 8)

TRANSISTOR TESTING SETS (Cat. 3)

TRANSISTORS (Cat. 8)

TRANSITS, Engineer's, see Surveying Instruments (Cat. 7)

TRANSITS, Pocket (Cat. 7

TRANSMITTERS, see Telemetering, also Pressure Transmitters, also Flow Transmitters (Cat. 1)

TRIMMERS, Capacitor, see Capacitors (Cat. 8)

TRUCK-MILEAGE RECORDERS, see Mileage Indicators (Cat. 7)

TUBE TESTERS, Electron (Cat. 3)

TUBES, Cathode Ray, including Display, Camera, Storage, etc. (Cat. 8)

TUBES, Discharge, Gas and Vapor, including Argon, Mercury, Neon, Sodium, etc. (Cat. 8)

TUBES, Electrometer (Cat. 8)

TUBES, Electron, Vacuum (Cat. 8)

TUBES, Geiger-Mueller—Cat. 8, (see also Counters, G-M—Cat. 4)

TUBES, Glow—Cat. 8, (see also Tubes, Discharge—Cat. 8)

TUBES, Ignitron (Cat. 8)

TUBES, Klystron (Cat. 8)

TUBES, Magnetron (Cat. 8)

TUBES, Nessler (Cat. 4)

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TUBES, Polariscope (Cat. 4)

TUBES, Pyrometer Protection, see Thermowells (Cat. 1)

TUBES, Thyratron (Cat. 8)

TUBES, Travelling Wave—Cat. 8, (see also Microwave Equipment—Cat. 8)

TUBES, Ultra-Violet Light, see Light Sources (Cat. 4)

TUBES, Vacuum, see Tubes Electron, Vacuum (Cat. 8)

TUBES, Voltage Regulator, see Tubes, Discharge (Cat. 8), also Current Regulators (Cat. 3)

TUBES, X-ray (Cat. 8)

TUBING ARMORED, see Tubing, Capillary (Cat. 9), also Tubing, Flexible, Multiple Tube Bundles (Cat. 8)

TUBING, Bourdon (Cat. 9)

TUBING, Capillary (Cat. 9)

TUBING, Ceramic (Cat. 9)

TUBING, Fibre (Cat. 9)

TUBING, Flexible (Cat. 9)

TUBING, Flexible, Multiple Tube Bundles (Cat. 8)

TUBING, Fused Quartz (Cat. 9)

TUBING, Glass Fibre, Insulation (Cat. 9)

TUBING, Laminated Phenolic (Cat. 9)

TUBING, Low Coefficient of Expansion (Cat. 9)

TUBING, Mica (Cat. 9)

TUBING, Miscellaneous, including Illium, Invar, Kovar, special alloy, tantalum (Cat. 9)

TUBING, Nickel, Monel, Inconel (Cat. 9)

TUBING, Paper (Cat. 9)

TUBING, Plastic (Cat. 9)

TUBING, Plastic Coated Copper & Aluminum (Cat. 9)

TUBING, Precious Metals, including Platinum (Cat. 9)

TUBING, Precision Bore, Glass, see Glass Tubing (Cat. 9)

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TUBING, Rubber (Cat. 9)

TUBING, Varnished or Lacquered (Cat. 9)

TUBING SUPPORTS, including Cable Supports, Troughs, etc. (Cat. 9)

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TURBIDIMETERS (Cat. 4)

TURBINE GOVERNORS (Cat. 1)

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ULTRA-VIOLET INDICATORS and/or RECORDERS (Cat. 1)

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VACUUM APPARATUS, including Pumps (Cat. 1)

VACUUM CONTROLLERS, INDICATORS, and/or RECORDERS (Cat. 1)

VACUUM GAGES, Hot-Wire, Pirani, etc. (Cat. 4)

VACUUM GAGES, Ionization (Cat. 4)

VACUUM GAGES, McLeod (Cat. 1)

VACUUM GAGES, Molecular (Cat. 4)

VACUUM GAGES, Thermocouple (Cat. 4)

VACUUM, HIGH (below 1 mu) CONTROLLERS, INDICATORS, and RECORDERS (Cat. 1)

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VACUUM SPECTROGRAPHS, see Spectrographs (Cat. 4)

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VACUUM-Tube RELAYS, see Relays, Electronic (Cat. 8)

VACUUM TUBE VOLTMETERS (Cat. 3)

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VALVE-OPERATING DEVICES, Electropneumatic, see Converters, Electric-to-Pneumatic (Cat. 8)

VALVE OPERATING DEVICES, Hydraulic, including Cylinder (Cat. 1)

VALVE OPERATING DEVICES, Pneumatic, including Cylinder (Cat. 1)

VALVE OPERATING DEVICES, Solenoid (Cat. 1)

VALVE POSITIONERS (Cat. 1)

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VALVES, Bellows Seal, see Valves, Packless (Cat. 1)

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VALVES, Control (Cat. 1)

VALVES, Diaphragm Seal, including Saunders Patent, Crane, Wyna Type, etc. (Cat. 1)

VALVES, Flexible Sleeve (Cat. 1)

VALVES, Float-operated (Cat. 1)

VALVES, Gage Cocks (Cat. 1)

VALVES, High Pressure (Cat. 1)

VALVES, Needle (Cat. 1)

VALVES, Packless (Cat. 1)

VALVES, Plug (Cat. 1)

VALVES, Pressure Reducing and/or Back-Pressure, see Valves, Control (Cat. 1)

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VIBROMETERS (Cat. 1)

VIBROSCOPES (Cat. 1)

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VISCOSIMETERS, Kinematic (Cat. 4)

VISCOSIMETERS, Recording (Cat. 4)

VISCOSIMETERS, Saybolt (Cat. 4)

VISCOSIMETERS, Ultrasonic (Cat. 4)

VISCOSIMETERS, Zahn (Cat. 4)

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VOLTAGE DIVIDERS, see Attenuators, also Potentiometers (Resistors)—Cat. 8

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VOLTAGE REGULATORS, Glow Tube (Cat. 3)

VOLTAGE REGULATORS, Line Voltage (Cat. 3)

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VOLT-AMPERE-HOUR METERS (Cat. 3)

VOLT-AMPERE METERS, Reactive (Cat. 3)

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VOLTMETERS, Digital (Cat. 3)

VOLTMETERS, Electrostatic (Cat. 3)

VOLTMETERS, Indicating and Recording (Cat. 3)

VOLTMETERS, Laboratory Standard (Cat. 3)

VOLTMETERS, Micro, RF, Millivolts and Microvolts (Cat. 3)

VOLTMETERS, Millivoltmeters, AC, Rectifier (Cat. 3)

VOLTMETERS, Oxide Rectifier (Cat. 3)

VOLTMETERS, Peak (Cat. 3)

VOLTMETERS, Thermo (Cat. 3)

VOLTMETERS, Thermionic Rectifier (Cat. 3)

VOLTMETERS, Vacuum-Tube, see Vacuum-Tube Voltmeters (Cat. 3)

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WATTHOUR METER TESTERS (Cat. 3)

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WATTMETERS, Electrostatic (Cat. 3)

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WIRE, Copper, Enameled (Cat. 9)

WIRE, Covered (Cat. 9)

WIRE, Fuse (Cat. 9)

WIRE, Insulated, all insulations except enameled and refractory (Cat. 9)

WIRE, Magnet (Cat. 9)

WIRE, Metal Shielded (Cat. 9)

WIRE, Miscellaneous, including Bismuth, Columbium, Illium, Molybdenum, special alloy Tantalum (Cat. 9)

WIRE, Nickel, Monel, and Nickel Chromium (Cat. 9)

WIRE, Refractory Insulated (Cat. 9)

WIRE, Resistance (Platinum or Platinum-Iridium)—Cat. 9

WIRE, Resistance, except Platinum and Platinum-Iridium (Cat. 9)

WIRE, Spring (Cat. 9)

WIRE, Stainless Steel, see Wire, Spring (Cat. 9)

WIRE, Swedish, Music, see Wire, Spring (Cat. 9)

WIRE, Thermocouple, Base Metal (Cat. 9)

WIRE, Thermocouple, Rare Metal (Cat. 9)

WIRE MEASURING GAGES, see Dimensional Gages (Cat. 6)

WIRE TESTING MACHINES (Cat. 6)

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WOW METER (Cat. 3)

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WRENCHES, Torque (Cat. 9)

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X-RAY EQUIPMENT—Cat. 6, (see also Flaw Detectors—Cat. 6)

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X-RAY MEASURING INSTRUMENTS (Cat. 4)

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CATALOG LOCATOR

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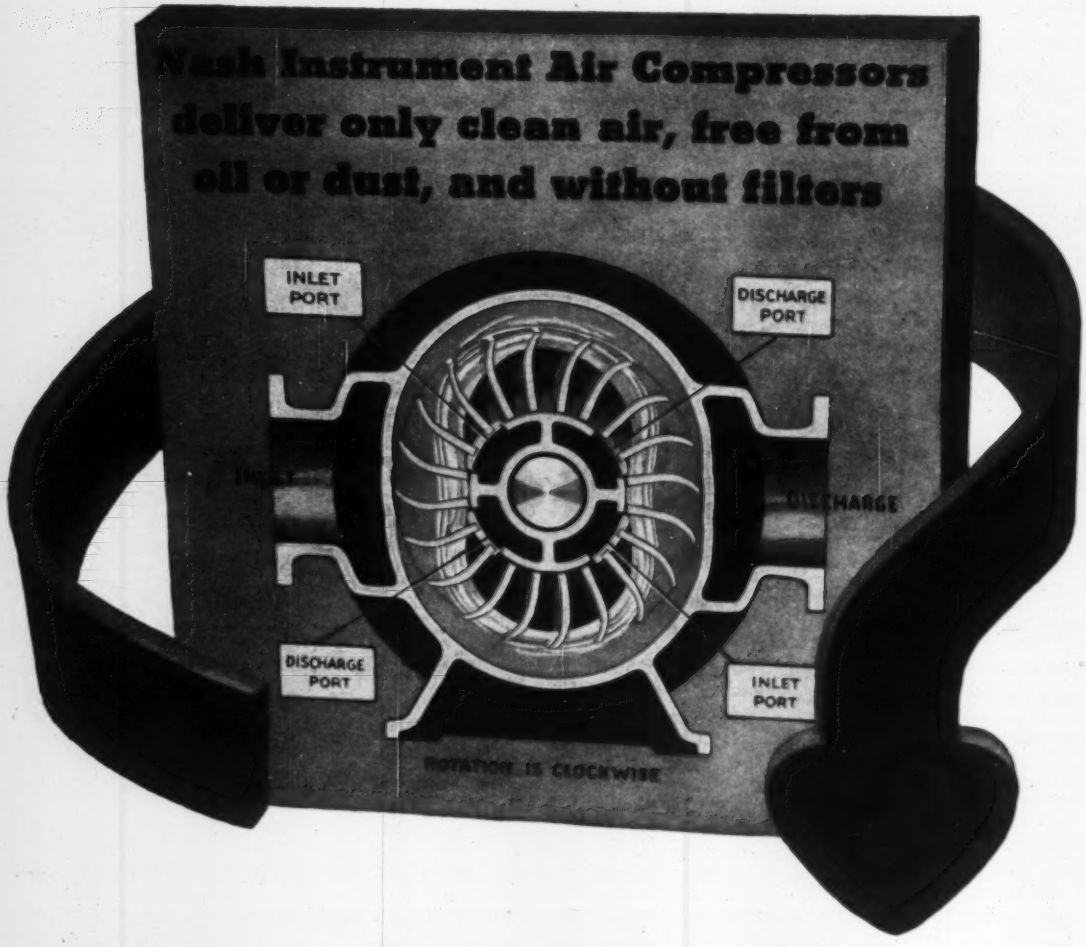

Nash Instrument Air Compressors deliver only clean air, free from oil or dust, and without filters
INLET PORT
DISCHARGE PORT
DISCHARGE PORT
INLET PORT
ROTATION IS CLOCKWISE

Here is Why!

You can dispense with oil filters and dust filters when you install ®Nash® Clean Air Compressors. You can save the cost of maintaining these devices. You can greatly reduce instrument maintenance costs. For the Nash employs no internal lubrication, therefore no troublesome oil is in the delivered air. Moreover, air from a Nash is thoroughly washed and cooled as it passes thru the pump. Dust in the plant atmosphere, even fly ash, is immediately removed.

®Nash® Clean Air Compressors are simple, with only one moving element. No valves, gears, pistons, sliding vanes, or other enemies of long life and constant performance complicate a Nash. No aftercoolers are needed. You will find it profitable to investigate these pumps, now.

- No oil filters.
- No dust filters.
- No internal lubrication to contaminate air handled.
- No internal wearing parts.
- No valves, pistons, or vanes.
- Non-pulsating pressure.
- Original performance constant over a long pump life.
- Low maintenance cost.

NASH ENGINEERING COMPANY
370 WILSON, SO. NORWALK, CONN.

Industrial Control Instrumentation

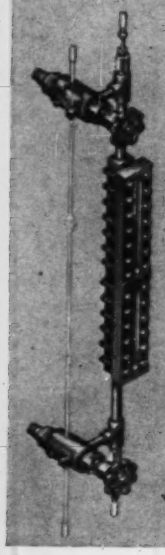
1961 BUYERS' GUIDE

1

SYSTEMS, DEVICES, AND ACCESSORIES
FOR MEASUREMENT AND CONTROL
OF TEMPERATURE, PRESSURE, FLOW AND OTHER
PRODUCTION VARIABLES IN THE
MANUFACTURING AND PROCESS INDUSTRIES

When you need

HEATED GAGES and VALVES



select from a complete line . . . Jerguson offers you a model for every need

Jerguson Heated Gages and Valves are built to meet the special conditions present when working with liquids which must be kept at higher than ambient temperatures . . . for process reasons or to hasten the speed of response to level changes. They also have wide application to prevent breakage through freezing.

Select from a complete line

- Reflex or transparent gages
- Union or non-union valves
- External or internal heating
- Steam or electric heating
- Materials meet or exceed AISI, ASTM and/or API-ASME requirements

New Electric Heating

Electrically heated gages have a completely new heating system with greatly improved efficiency. For use where steam is not available. Offered in External Tube Models only.

Write for Heated Gage Catalog.

JERGUSON

Gages and Valves for the Observation of Liquids and Levels

JERGUSON GAGE & VALVE COMPANY

100 Adams Street, Burlington, Mass.

Offices in Major Cities

CIRCLE 2 ON READER-SERVICE CARD

When Using This Guide

look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

AIR CLEANERS, Instrument

Adams Co R P
Advance Industries
Air Maze Corp
Anderson Co V D
Cuneflow
DeVilbiss Co
Dollinger Corp
Gas Drying Inc
Gelman Instrument
Hankison Corp
Johnson Corp
Kahn & Co
Kieley & Mueller
King Engrg
Logan Engrg
M-H Industrial Controls
Norgren Co C A
Phoenix Precision Instr
Pittsburgh Lectrodryer
Radex Corp
Robbins Aviation Inc
Selas Corp of America
Trinity Equipment
Universal Dynamics Corp
Wilkerson Corp

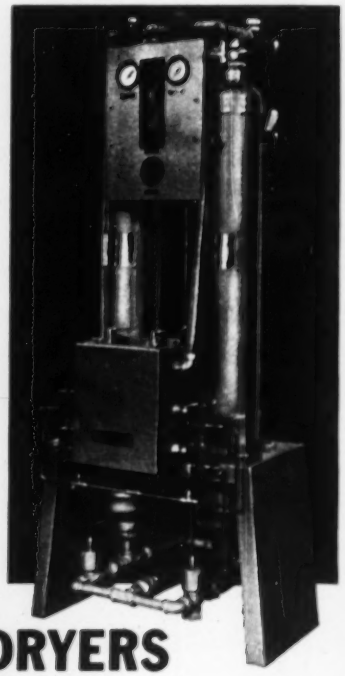
AIR COMPRESSORS, Instrument

Airesearch Mfg Co
Air-Shields Inc
Applied Dynamics
Bell & Gossett Co
Chemiquip
Cornelius Co
DeVilbiss Co
Dunham-Bush Inc
Edison Industries T A
Gast Mfg Corp
Gelman Instrument
General Turbine
Great Lakes Mfg
Ingersoll-Rand Co
Johnson Service Co
Kahn & Co
Leiman Bros Inc
Nash Engineering
Norgren Co C A
Penna. Pump & Comp
Sterling Precision
Westinghouse Air Brake

BEARING TEMPERATURE INSTRUMENTS, Including Alarm

Advanced Dynamics
Aero Research Instr
Amot Controls Corp
Applied Electronics
Assembly Products Inc
Atkins Technical Inc
Burling Instrument
Daystrom/Weston
Edison Industries T A
Electro Devices (Mo.)
Foxboro Company
GE Apparatus Sales Div
General Railway Signal
Gilmore Industries
Hamilton Standard Div
Illinois Testing Labs
Leeds & Northrup
Lundell & Co
M-H Brown Instrs Div
M-H Industrial Controls
Martin-Rockwell Corp
Moeller Instr
Murphy Mfg Inc
Nacimco Products

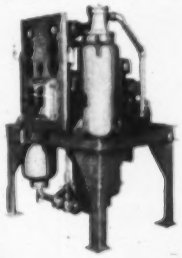
Reliable Dry Air for Control of INSTRUMENTATION with TRINITY *Heat-Les* DRYERS



Here is the most economical—both initially and maintenance-wise—source of dry air for instrumentation. The Trinity Heat-Les dryer has no heaters—operates on a principle so simple, so efficient that operating costs are cut to a minimum while performance exceeds that of any other dryer design. Proved in hundreds of installations.

ALSO HEAT-REACTIVATED DRYERS

Trinity also offers a complete range of capacities in heat-reactivated type dryers of an advanced design, offering the greatest economies and performance for this type dryer. **WRITE FOR COMPLETE TRINITY DRYER AND ACCESSORY TECHNICAL MANUALS...**



TRINITY World leader in dry gas/air systems

TRINITY EQUIPMENT CORPORATION, CORTLAND, NEW YORK

CIRCLE 3 ON READER-SERVICE CARD

BAILEY MULTI-POINTER GAGE UNIT

• Provides two large, easily-read 7-inch vertical gages in space only 4 inches wide. Multi-Pointer Gage Units may: (1) measure and indicate draft, pressure, differential pressure, and level; (2) transmit these variables either pneumatically or electrically to remote indicators, recorders, and/or controllers; or (3) receive and indicate any measured variables which may be transmitted pneumatically by standard SAMA ranges of 3-15 psig or 3-27 psig.

Any number of basic two-indicator units may be placed side-by-side to provide indications of related factors. Each two-indicator unit is separately mounted.

Standard ranges from 0-0.5 in. H_2O to 0-5000 psig are available.

Request Product Specifications M42-2.

BAILEY METER COMPANY
1041 IVANHOE ROAD CLEVELAND, O.

CIRCLE 4 ON READER-SERVICE CARD

Nanmac Corp
Panellit Inc
Pickard & Burns
Pyrometer Instr Co
Royco Instruments Inc
Ruge Associates
Scam Instrument Corp
Thermo Electric
United Electric Controls
Victory Engrg Corp
Weksler Instruments
West Instrument
Westronics Inc
Wheelco Instruments Div
Winslow Company Inc

BOILER ROOM INSTRUMENTS, including Condenser Leakage, Damper, Desuperheat, Draft, Feedwater, Specialties, Steam, Stoker, etc. (see also Combustion Safeguards, also Gas Analyzers)

Automatic Timing & Contls
Bacharach Indus Instr
Barton Instrument
Bailey Co Chas M
Bailey Meter Co
Barber-Colman
Bin-Dicator Co
Cambridge Instrument
Chemiquip
Cramer Controls Corp
Dagstrom/Weston
Defender Instrument
Diamond Power Specialty
Dwyer Mfg F W
Eclipse Fuel Engrg
Edison Industries T A
Ellison Draft Gage
Exactel Instrument
Gelman Instrument
General Controls
General Regulator Corp
GPE Controls
Hagan Chem & Controls
Hays Corporation
Industrial Instrs Engrg
Industrial Instrs Inc
Jergnson Gage & Valve
King Engrg
Leeds & Northrup
M-H Industrial Controls
Magnetrol Inc
Manning Maxwell & Moore
Mason-Neilan
McDonnell & Miller
Meriam Instr Co
Mine Safety Appliances
M-H Rubicon Instrs Div
North American Mfg
Photomation Inc
Powers Regulator
Powertron Ultrasonics

CLEAN UP YOUR INSTRUMENT AIR SUPPLY

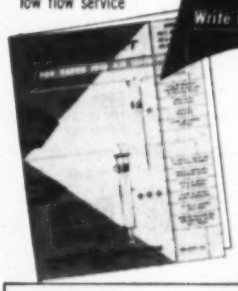
Write for these bulletins!

Bul. F-100
Where cooling water is not available

Bul. 103
For dead end and low flow service

Bul. 4158
Integrated filter, dehydrator, separator, trap

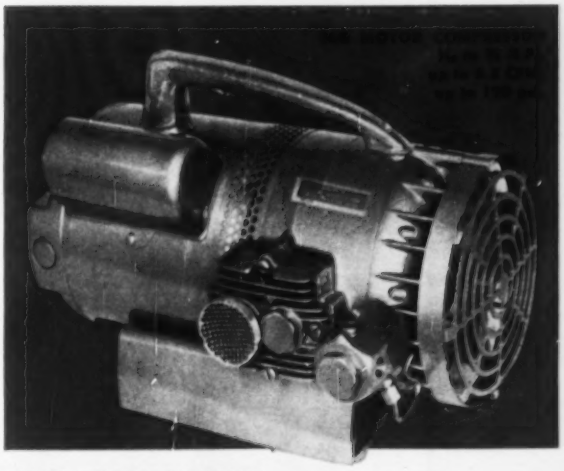
Bul. 501C
Efficient, automatic condensate discharge



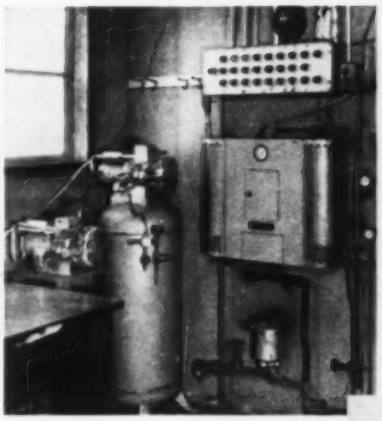
Hankison

COLLEGE & PIKE
CANONSBURG, PA.

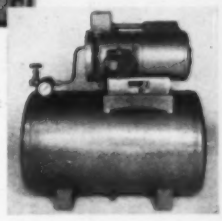
CIRCLE 5 ON READER-SERVICE CARD



ON-THE-SPOT *Oil-less* COMPRESSED AIR FOR INSTRUMENT CONTROL



30 gal. A.S.M.E. Air Tank Outfits
75 and 175 lb. units.



10 gal. Air Tank Outfits.
35, 75, 135 lbs. units mounted on non-code tanks. 75 and 175 lb. units available with A.S.M.E. Code tanks.

For instrument control with compressed air, patented B&G Oil-less Compressors offer outstanding, exclusive advantages.

They deliver air *completely oil-free!* Carbon-graphite piston rings and skirts need no lubrication; bearings are grease-packed and sealed for life. Numerous design and construction features assure dependable delivery of cleaner, cooler, drier air and smoother operation.

B&G Oil-less Compressors can be located at the site of the control, eliminating long pipe lines which may contaminate the air with dirt and condensation.

58 Models to choose from — tank mounted, portable, motor and gas engine driven.

For complete information on B&G Oil-less Compressors and Vacuum Pumps, send for Catalog GO-1156.

B G

***Oil-less* AIR COMPRESSORS**

BELL & GOSSETT COMPANY

Dept. GJ-44, Morton Grove, Illinois

CIRCLE 6 ON READER-SERVICE CARD

SALINITY INDICATORS

- Detector and Controller designed to BuShips Spec (MIL-S-15103C) for continuous automatic supervision of water saline content. Prevents contamination of boiler feed water and evaporator plant fresh water output.
- Condenser Leakage Detectors.
- Boiler Water Test Kits.
- Boiler Room Instruments.

Write For Complete Catalog

Industrial Instruments Inc.
89 Commerce Road Cedar Grove Essex County N J

CIRCLE 7 ON READER-SERVICE CARD

Pyrometer Instr Co
Ranarex Div
Reliance Instr Mfg
Republic Flow Meters
Scam Instrument Corp
Sentry Equipment
Standard Instrument
Thermco Instrument
Uehling Instrument
Victory Engrg Corp
Warrick Co Chas F
Weksler Instruments
Westronics Inc

B.T.U. INDICATORS

Air Conditioning Equip
American Meter Co
Bailey Meter Co
Computers Inc
Foxboro Company
Hagan Chem & Controls
Hays Corporation
Westronics Inc

CHEMICAL FEEDERS, Dry and Liquid

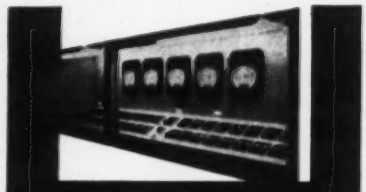
American Meter Co
Automatic Timing & Contls
B-I-F Industries
Clark Cooper
CompuDyne Corp
Dynametrics Corp
Exline Engrg
Fischer & Porter Co
Fuller Co
Gump Co B F
Hagan Chem & Controls
Hills-McCanna
Jeffrey Mfg
Lap, Insulator
Lee Engrg Co
Madden Corp
Milton Roy Co
Natl Instrument Co
Permutit Co
Republic Flow Meters
Research Appliance Co
Richardson Scale Co
Simplex Valve & Meter
Syntron Co
Thayer Scale Corp
Wallace & Tiernan

CLOCKS, Master or Primary

Alina Corp
American Electronics Inc
American Meter Co
Bulova Watch Co
Chrono-Log Corp
Cincinnati Time Recorder
Computer Control
Computer Measurements
Cubic Corp
Edwards Co Inc
Electro Instruments
General Radio
Geotechnical Corp
Hamilton Watch Co
Haydon Co A W
Hermes Electronics
Ingraham Co
National Standard Elx
Natl Time & Signal
Pickard & Burns
Rockwell Mfg Co
Rohde & Schwarz
Standard Electric Time
Stromberg Div
Taller Cooper Div
Times Facsimile
Waltham Precision Instr
Wilkes Engrg & Constr

CLOCKS, Minute Impulse and Synchronous

Alina Corp
Anadex Instruments Inc
Automatic Control Co
Automatic Timing & Contls
Borg Clock Div
Bulova Watch Co
Chrono-Log Corp
Cincinnati Time Recorder
Computer Control
Cramer Controls
Cubic Corp
Dater Corp
Dymec
Edwards Co Inc
Electro Instruments
Electronic Controls Inc
General Controls
General Devices
Gytex Corp
Haydon Co A W
Haydon Instrument
Lafayette Instr
Microsonics Div
Natl Time & Signal
Navigation Computer Corp
Patapsco Inc
Photocon Research
Rockwell Mfg Co
Sagamo Electric
Standard Electric Time
Stromberg Div
Sunshine Scientific
Syracuse Electronics
Taller Cooper Div
Tempo Instrument
Thompson Clock Co
Times Facsimile
United Electrodynamics
Waltham Precision Instr
Wang Laboratories



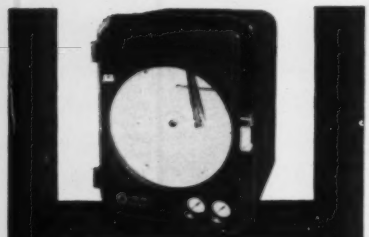
HAGAN COMBUSTION CONTROLS

Hagan pneumatic or solid state electronic combustion control systems give the ultimate in accurate, dependable control. Hagan systems include basic combustion control, 3-element feedwater control, pump recirculation control and steam temperature control.

Hagan systems, on both central station and industrial boilers, have established records for economy, reliability and very low maintenance costs.

HAGAN CHEMICALS & CONTROLS, INC.
DIVISIONS: CALGON COMPANY; HALL LABORATORIES
HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Fiumendosa No. 13, Milano, Italy

CIRCLE 10 ON READER-SERVICE CARD



HAGAN FEED WATER CONTROL

The Hagan system of 3-element feed water control is compensated for variations in fluid density, a feature not available in most systems.

In addition, the system is automatically compensated for discrepancies between steam generated and steam measured. This means drum level is held at set point, even during blowdown or steam soot-blowing.

HAGAN CHEMICALS & CONTROLS, INC.
DIVISIONS: CALGON COMPANY; HALL LABORATORIES
HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Fiumendosa No. 13, Milano, Italy

CIRCLE 8 ON READER-SERVICE CARD

BAILEY BOILER METER

Steam Flow—Air Flow Ratio Meter

● This dependable and accurate guide to maximum combustion economy is easily understood and followed by operators. It indicates, records, and integrates Steam Flow from the boiler, records Air Flow supplied for combustion, and records Flue Gas Temperature.

Best combustion efficiency is secured by keeping the Steam Flow and Air Flow pens together so that the records coincide. The record of the Flue Gas Temperature when compared with that of Steam Flow shows the condition of baffles and tubes, and indicates heat absorption efficiency.

The **Bailey Boiler Meter** reduces fuel costs, lessens maintenance and outage, lowers standby costs, and adds capacity. It is suitable for boilers of 100 hp or more and for all types of fuels.

To obtain maximum benefit from the **Bailey Boiler Meter**, it should be made an integral part of a Bailey Combustion Control System so that combustion losses are automatically corrected as they tend to appear.

Request Product Specification M61-1.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd., Montreal, Canada

CIRCLE 9 ON READER-SERVICE CARD

BOILER ROOM INSTRUMENTS

- Electrolytic conductivity apparatus for steam and condensate degassing.
- Boiler Feedwater measurements.
- A complete line of recording instruments available in line and battery powered models.
- Salinity detecting and controlling equipment.
- Condenser leakage detectors.

Write for complete catalog

Industrial Instruments Inc.

CIRCLE 11 ON READER-SERVICE CARD

CLOCKS, Secondary
Alina Corp
Automatic Timing & Contls
Bulova Watch Co
Cincinnati Time Recorder
Edwards Co Inc
Electro Instruments
General Devices
Geotechnical Corp
Hamilton Watch Co
Micronics Div
Natl Time & Signal
PIC Design Corp
Rockwell Mfg Co
Standard Electric Time
Stromberg Div
Tempo Instrument

CLOCKS, Standard
Alina Corp
Automatic Timing & Contls
Bulova Watch Co
Cincinnati Time Recorder
Edwards Co Inc
Electro Instruments
General Devices
General Radio
Geotechnical Corp
Hamilton Watch Co
Hermes Electronics
Hewlett-Packard
Ingraham Co
National Standard Elx
Natl Time & Signal
PIC Design Corp
Research Controls
Rohde & Schwarz
Rockwell Mfg Co
Standard Electric Time
Stromberg Div

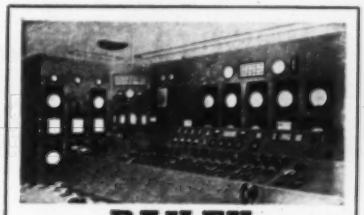
CLOCKS, Stop
Alina Corp
Automatic Timing & Contls
Burke & James
Cramer Controls
Dimco-Gray
Ducommun Co M
General Devices
Hamilton Watch Co
Hayden Co A W
Micronics Div
Precision Scientific Co
Scientific Industries
Seitlest Inc
Standard Electric Time
Stopclock Co C H
Thompson Clock Co

COMBUSTION CONTROL EQUIPMENT (See also Boiler Room Instruments)
Aeronaut & Instr Div
Automatic Timing & Contls
Automatic Switch Co
Bailey Meter Co
Cambridge Instrument
Cash Co A W
Cutler-Hammer
Daystrom/Weston
Defender Instrument
Diamond Power Specialty
Dwyer Mfg F W
Eclipse Fuel Engrg
Ellison Draft Gage
Farris Engrg Corp
Fenwal Inc
Fosboro Company
General Controls
General Regulator
GPE Controls
Hagan Chem & Controls
Hays Corporation
Industrial Instrs Inc
Industrial Instrs Engrg
Kieley & Mueller
Korfund Co
Leeds & Northrup
North American Mfg
Panellit
Partlow Corp
Photomation Inc
Protection Controls
Pyrometer Instr Co
Ranarex Div
Reliance Instr Mfg
Security Valve Co
Selas Corp of America
Southwestern Indus Elx
Texas Instruments Inc
Wheelco Instruments Div

CONSISTENCY REGULATORS, Pulp and Paper
Automatic Timing & Contls
Automation Products
Brabender Instr C W
Cash Valve Mfg
Curtiss Wright
DeZurik Corp
Fischer & Porter Co
General Regulator

CONTROL SYSTEMS, General-purpose, Air-operated
Airborne Instr Lab
American Meter Co
Amot Controls Corp
Astra Technical Instr
Atwood & Morrill Co
Automatic Control Co
Automation Devices Inc
Automation Dynamics
B-I-F Industries
Bailey Co Chas M
Bailey Meter Co
Baird Atomic
Barworth Inc
Bendix Utica Div
Berreo Engrg Corp
Black Sivalls & Bryson
Bobrick Aero Missile
Boonshaft and Fuchs
Bristol Co
Brooks Instrument
California Controls
Cash Co A W
Cash Valve Mfg
Chemiquip
CompuDyne Corp
Conoflow
Control Circuits Inc
Control Panel Corp
Custom Comp Switches
Cutler-Hammer
Designers for Industry
Daystrom/Weston
Dole Valve Co
Dynametrics Corp
Electronic Dev Corp
Fischer & Porter Co
Fisher Governor
Fosboro Company
Fulton Sylphon Div
General Controls Co
General Regulator
Hagan Chem & Controls
Hunt Valve Co
Industrial Engrg Corp
Infilco Inc
Intelex Systems Inc
Johnson Service Co
Kieley & Mueller
Kollsman Instr Corp
Leeds & Northrup
Leslie Co
M-H Brown Instrs Div
M-H Industrial Controls
M-H Missile Equip Div
Manning Maxwell & Moore
Mason Neilan
Mercoid Corp
Modernair Corp
Moore Products Co
OPW—Jordan
Panellit Inc
Partlow Corp
Phoenix Precision Instr
Pneu-Hydro Valve
Powers Regulator
Ramsey Engrg Co
Reeves Pulley Co
Republic Flow Meters
Research Controls
Ronan Panel Co
Scientific Instrument
Scott Aviation Corp
Specialties Inc
Sterling Precision
Tapco Group
Taylor Instrument
Trerice Co H D
Ultronix Inc
United Aircraft Prods
United Electric Controls
U S Electrical Motors
Universal Match
Westinghouse Air Brake
Weston Hydraulics Ltd

CONTROL SYSTEMS, General-purpose, Electronic or Electronic
Abacus Inc
Abrams Instrument
Advanced Dynamics
Advanced Research
Aeronaut & Instr Div
Airborne Accessories
Airborne Instr Lab
Airpax Electronics
Airesearch Mfg Co
Allen-Bradley
Allis-Chalmers
American Data Div
Amer Meas & Control
American Pamcor Inc
Anglo Corp
Anadex Instruments Inc
Analogue Controls Inc
Appalachian Electronic
Applied Electronics
Applied Science Corp
Assembly Products Inc
Astra Technical Instr
Atronic Products
Automatic Control Co
Automatic Electric
Automatic Switch Co
Automatic Timing & Contls
Automation Devices Inc
Automation Dynamics
Babcock Radio Engrg
Bailey Meter Co
Baird Atomic
Baldwin-Lima-Hamilton
Barber-Colman
Barnes Development Co
Beinck Instrument
Bendix Montrose Div
Bently Scientific
Berkeley Dynamics
Berreo Engrg Corp
B-I-F Industries
Bill Jack Scientific
Bin-Dicator Co
Blue M Electric
Boonshaft and Fuchs
Borg-Warner Controls
Bowser Inc
Brach Mfg
Briggs Associates
Bristol Co
Brooks Instrument
Buffalo Meter Co
Bulova Research
Burroughs Corp
Bush Associates G F
B/W Controllers
Cargill Detroit
Carmody Corp
Cash Valve Mfg
Cincinnati Time Recorder
Clark Controller
CompuDyne Corp
Computer Control
Computer Measurements
Computers Inc
Conoflow
Consel Controls
Consel Electrodynamics
Consolidated Systems
Control Circuits Inc
Control Corp
Control Electronics
Control Equipment Corp
Control Panel Corp
Control Technology
Controls Co of Amer
Corbett Science Labs
Cox Instruments
Cramer Controls Corp
Cubic Corp
Cunningham Son & Co
Curtiss-Wright IMI
Custom Comp Switches
Cutler-Hammer
Dalmotor Div
Datex Corp
Daystrom/Control System
Daystrom Mil Elx
Daystrom/Weston



BAILEY
Combustion
CONTROL

● Bailey Automatic Combustion Control results in substantial savings in fuel; increased boiler capacity; reduction of boiler and furnace maintenance; more time for operators to devote to general station maintenance; and improvement in the general character of service.

Bailey Automatic Combustion Control makes possible the every day operation of boilers at test efficiencies, because it is a COMPLETE combustion control system which: (1) automatically maintains steam pressure by supplying fuel and air simultaneously to boilers in accordance with changes in steam demand; (2) automatically maintains most economical fuel-air ratio by incorporating the Bailey Boiler Meter as an integral part of the system; (3) automatically maintains the desired furnace draft; and (4) automatically distributes load among boilers so that each unit carries its share.

This sturdy, inexpensive, air-operated control system has been applied to all sizes and types of boilers ranging from 200 hp upward. It is applicable to all fuels and all methods of firing.

Request Bulletin 515 and Bulletin 1023.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O.
Bailey Meter Company Ltd. Montreal, Canada

CIRCLE 12 ON READER-SERVICE CARD

HAGAN POWRMAG CONTROLS

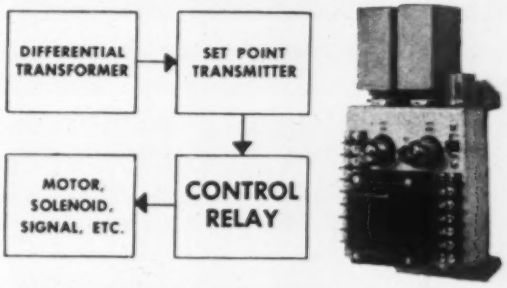
For all types of process control systems, Hagan PowrMag (magnetic amplifier) analog computer control offers high stability, simplified construction and compatibility with data processing equipment.

- All solid state—no tubes or transistors.
- Interchangeable plug-in modular elements—no stocking problems.
- Rate, proportional band, reset action—all other computer functions built-in.
- Space saving panel stations—easy to maintain.

HAGAN CHEMICALS & CONTROLS, INC.
DIVISIONS: CALGON COMPANY, HALL LABORATORIES
HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Fiumendosa No. 13, Milano, Italy

CIRCLE 13 ON READER-SERVICE CARD

ATCOTRAN CONTROL RELAY



CONVERTS SENSING SIGNAL INTO SPDT SWITCH ACTION

Flexible and versatile building block for automatic control systems operates with Atcotran differential transformer in systems for sensing pressure, flow, force, level, weight, thickness, width, and other process variables.

Responds to 0.0001 inch armature displacement of differential transformer. Provides fast, dependable control of machine or process functions (linear displacement, machine tool motion, table indexing, package check weighing, liquid level measurement, etc.) Frictionless and temperature stable, utilizes service-free printed circuit.

Write for free literature on automatic control systems components.

atc **AUTOMATIC TIMING & CONTROLS, INC.**
KING OF PRUSSIA, PENNA.
A Subsidiary of American Manufacturing Company, Inc.

CIRCLE 14 ON READER-SERVICE CARD

BAILEY FLAME DETECTOR

Senses the presence of a flame and operates an internal relay or transmits a signal to a static switch. Monitors fuel burning equipment using coal, gas, or oil. Provides services for alarm, indication, and/or tripping of fuel when used in conjunction with the necessary auxiliaries.

Responds only to flame under surveillance, not to adjacent flames or to infrared radiation from glowing refractories. Suitable for use in areas with ambient temperatures from —20F to +300F. Uses solid state circuitry throughout. Quick-disconnect, keyhole mounting provides ease of maintenance. Completely weatherproof for outdoor installation.

Request Product Specification E66-2 for details.

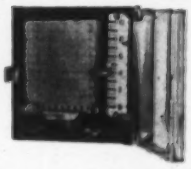
BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd., Montreal, Canada

CIRCLE 15 ON READER-SERVICE CARD

Miniature Graphic Panel instruments for pneumatic transmission

This new system measures, indicates, records and controls pressure (5 in. water to 10,000 psi), absolute pressure (5mm mercury absolute and up), temperature, vacuum, flow, differential pressure, liquid level, and mechanical motion.

The only instrument that fully carries out the basic graphic-panel idea. Includes full plug-in-service and continuous valve position indication. There are 38 receivers and 36 controller models and the widest variety of transmitters on the market. A model is available that will exactly meet every requirement.



Bristol Metagraphic Recorder

Write for bulletin A128 today.

BRISTOL COMPANY
112 Bristol Rd., Waterbury 20, Conn.

CIRCLE 17 ON READER-SERVICE CARD

Delco Radio
Designers for Industry
Designs for Tomorrow
Detroit Controls
Devco Engrg Inc
Diamond Power Specialty
Di/An Controls
Diatron Inc
Dickson Co
DJECO
Donner Scientific
Dunn Engrg Assocs
Dynametrics Corp
Dynapar Corp
Dynatronics Inc
Dynex Inc
Eagle Signal
Eastern Industries
Edison Industries T A
Eldorado Electronics
Electric Eye Equip
Electric Regulator
Electro Instruments
Electro Precision
Electro Products Labs
Electrodynamic Instr
Electro-Logic Corp
Electro-Mechanical Res
Electronic Associates
Electronic Controls Inc
Electronic System Dev
Electrosnap
Ellison Draft Gage
Energy Kontrols
Engelhard Industries
Engrs Equipment
Epic Inc
Erie Mfg Co
Erie-Pacific Div
Erie Resistor
Fairfield Engrg
Femco Inc
Ferranti Electric
Fischer & Porter Co
Fisher Governor
Foxboro Company
Fuller Co
Gemco Electric Co
General Computers Inc
General Controls Co
General Devices
GE Apparatus Sales Div
GE Computer Dept
GE Gen Purpose Contr Dept
GE Specialty Control
GE X-ray Dept
General Mills Inc
General Railway Signal
General Regulator
General Time Central Res
Genesys Corp
Giannini Controls Corp
GPE Controls
Gulton Industries
Hagan Chem & Controls
Haleby Electronics
Hamilton Standard Div
Hartman Electrical Mfg
Haydon Co A W
Hays Corporation
Healy-Ruff Co
Heller Co Gerald K
Hoover Electric Co
Howe Scale Co
Howell Instruments
Hughes Products
Hydel Inc
Industrial Control Co
Industrial Electronic
Industrial Engrg Corp
Industrial Nucleonics
Inficon Inc
Instruments Inc
Johnson Service Co
Jordan Controls
Kahn & Co
Kavanil Co
Kearfott Div
Kellogg Switchboard
Kollsman Instr Corp
Larson Instrument
Leach Corporation
Leeds & Northrup
Librascope Div
Ling Electronics
Link Div
Lumen Inc
Lynch Communication
Magnetic Controls Co
Magnetic Instr Co
Machinery Electrification
Maclaren & Co F B
Magnavox Co
Manning Maxwell & Moore
Mellvaine O T
Mercoid Corp
Metrulog Corp
Micro Gee Products
Microlec Corp
Midwest Automatic Inc
Milgo Electronic
M-H Aeronautical Div
M-H Boston Div
M-H Brown Instrs Div

Eliminate "high-cost specials" USE ARENS STANDARD-DESIGNS

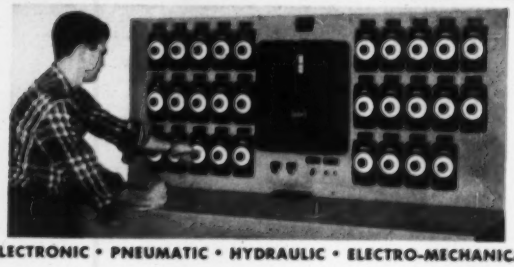
See us first . . . and you will probably find the control you are looking for. Save the time and expense of having a special remote control designed, because one of Arens' 44 (and growing all the time) standard-designs will probably fulfill your requirements. But if not, our engineering and research department will be pleased to work with you on special controls for your application. Write us your requirements.

For information on illustrated models, please circle readers' service number.

ARENS CONTROLS, INC.
2005 Greenleaf Street, Evanston, Illinois

CIRCLE 16 ON READER-SERVICE CARD

CONTROL SYSTEMS

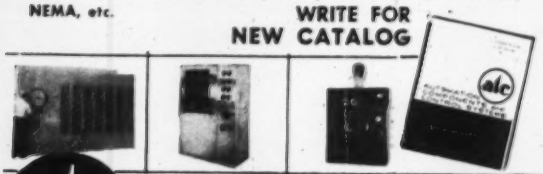


ELECTRONIC • PNEUMATIC • HYDRAULIC • ELECTRO-MECHANICAL

To realize economy, efficiency and higher plant profits, management is looking more and more to correctly applied automatic control.

Backed by years of research and field experience, ATC is uniquely equipped to help you in the design and manufacture of complete control systems for machines and processes. Full familiarity for execution to industry standards such as JIC, NEMA, etc.

WRITE FOR NEW CATALOG



atc AUTOMATIC TIMING & CONTROLS, INC.
KING OF PRUSSIA, PENNA.
A Subsidiary of American Manufacturing Company, Inc.

CIRCLE 18 ON READER-SERVICE CARD

M-H Industrial Controls
M-H Missile Equip Div
Missouri Res Labs
Monitor Systems Inc
Moore Associates
Motorola Military Elx
Norbatrol Electronics
Nucimco Products
Natl Electronics (Wyo.)
North Electric Co
Northern Radio Co
Norwood Controls
Oil Well Water Locating
Oilgear Co
Opad Electric Co
Optimized Devices
Ovitron Corp
Panellit Inc
Partlow Corp
Pearce-Simpson Inc
Peschel Electronics
Phileo Corp
Photobell Co
Photomation Inc
Pickard & Burns
Post Electronic
Potter Aeronautical
Potter Instr Co
Power-Tronic Systems
Princeton Div
Protection Controls
RCA Defense Electronic
Ram Meter Inc
Ramsey Engrg Co
Ransom Research
Raytheon Missile Sys
Reeves Instr Corp
Regent Controls
Reliance Instr Mfg
Republic Flow Meters
Research Industrial Lab
Revere Corp of Amer
Rockwell Mfg Co
Ronan Panel Co
Ruge Associates
Scientific Instrument
Security Controls Inc
Serdex Inc
Servo Systems Co
Servo-Tek Products
Simmonds Aerocessories
Southern Indus Elx
Special Instruments Lab
Specialties Inc
Spectra Electronics
Sterling Precision
Spectrol Electronics
Square D Co
Standard Instrument
Stromberg Carlson Co
Sunshine Scientific
Swan Electric Co
Swartwout Div
Syracuse Electronics
Taller Cooper Div
Tapco Group
Tapeswitch Corp
Taylor Instrument
Technitrol Engrg
Telechrome Mfg Corp
Teller Co
Tempo Instrument
Texas Instruments Inc
Thermo Electric
Thermo Electric Mfg
Thomas Engrg Inc
Thompson-Ramo-Wooldridge
Tipptronic Inc
Tracerlab Inc
Trerice Co H O
Triner Scale & Mfg
Tri-Tronics Co
Trott Electronics
Ultronix Inc
Union Switch & Signal
United Aircraft Prods
United Control Corp
United Control Systems
United Electric Controls
United Electrodynamics
United Engineers Inc
United Shoe Machinery
US Electrical Motors
Universal Match
Uniwave Inc
Varo Mfg Co
Vectrol Engrg
Vickers Electric Prods Div
Victory Engrg Corp
Vidar Corp
Virginia Electronics
Wang Laboratories
Warco Industries
Warrick Co Chas F
Waukesha Motor Co
West Instrument
WE-Director Systems
WE Power Control & Comm
Westinghouse Electric
Weston Hydraulics Ltd
Westronics Inc
Wheelco Instruments Div
Wheelock Signals Inc
Wiancko Engrg Co
Wickes Engrg & Constr
Worner Electronic Devices

CONTROL SYSTEMS, General-purpose, Electromechanical

Abrams Instrument
Acme Industrial Co
Advanced Research
Airborne Accessories
Airborne Instr Lab
Allen-Bradley
American Data Div
Ametek Meas & Control
Analogue Controls Inc
Applied Electronics
Applied Science Corp
Assembly Products Inc
Astra Technical Instr
Astronics Div
Automatic Control Co
Automatic Electric
Automatic Timing & Contls
Automation Dynamics
B-I-F Industries
Babcock Radio Engrg
Bailey Co Chas M
Baird Atomic
Baldwin-Lima-Hamilton
Barnes Development Co
Beloek Instrument
Bendix Scientific
Berkeley Dynamics
Berneo Engrg Corp
Bin-Dicator Co
Boonshaft and Fuchs
Bowser Inc
Brabender Instr C W
Brach Mfg
Briggs Associates
Bristol Co
Bryant Computer
Budd Co Inst Div
Bulova Research
Burroughs Corp
Bush Associates G F
Cargill Detroit
Cash Co A W
Cash Valve Mfg
Cincinnati Time Recorder
CompuDyne Corp
Conoflow
Consol Controls
Consol Electrodynamics
Consolidated Systems
Control Circuits Inc
Control Technology
Controls Co of Amer
Control Panel Corp
Corbett Science Labs
Cunningham Son & Co
Cox Instruments
Cramer Controls Corp
Crump Instrument
Cubic Corp
Curtiss-Wright-IMI
Custom Comp Switches
Cutler-Hammer
Dalmotor Div
Datex Corp
Daystrom Mil Elx
Daystrom/Weston
Daytronic Corp
Designers for Industry
Designs for Tomorrow
Devco Engrg Inc
Diamond Power Specialty
Diatron Inc
Dickson Co
Dillon & Co W C
Dittmore-Freimuth
Dunn Engrg Assocs
Dynamotrics Corp
Dynatronics Inc
Dynex Inc
Eagle Signal
Eastern Industries
Edison Industries T A
Electric Eye Equip
Electric Regulator
Electro Development
Electro Products Labs
Electrodynamic Instr
Electronic Controls Inc
Electrosnap
Energy Kontrols
Engis Equipment
Epic Inc
Erie Mfg Co
Fenwal Inc
Ferguson Hills
Fischer & Porter Co
Fuller Co
Fulton Sylphon Div
Gemco Electric Co
General Controls Co
General Devices
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
GE Specialty Control
General Mills Inc
General Railway Signal
General Regulator
General Time Central Res
Genesys Corp
Giannini Controls Corp
GPE Controls
Gulton Industries
Hagan Chem & Controls
Hamilton Standard Div
Haydon Co A W
Hays Corporation
Healy-Ruff Co
Hoover Electric Co
Howe Scale Co
Humphrey Inc
Hydel Inc
Industrial Control Co
Industrial Engrg Corp
Industrial Nucleonics
Inseo Company
Instru-tec Corp
Jordan Controls
Kahn & Co
Kavamil Co
Kearfott Div
Kellogg Switchboard
Kimball Co A
Kinetic Instr Corp
Kollsman Instr Corp
Land-Air Inc
Leeds & Northrup
Librascope Div
Linear Controls
Link Div
Lumen Inc
Machinery Electrification
Maclaren & Co F B
Magnetic Instr Co
McIlvaine O T
Mercoid Corp
Metrulog Corp
Micro Gee Products
Microloc Corp
Micrometrical Mfg
Midwest Automatic Inc
Milgo Electronic
M-H Aeronautical Div
M-H Boston Div
M-H Brown Instrs Div
M-H Industrial Controls
M-H Missile Equip Div
Motorola Military Elx
Muirhead Instrs Inc
Murphy Mfg Inc
Nucimco Products
North Atlantic Indus
North Electric Co
Northern Radio Co
Norwood Controls
Oil Well Water Locating
Oilgear Co
Ovitron Corp
Panellit Inc
Paraham Inc
Paraplegics Mfg Co
Partlow Corp
Pearce-Simpson Inc
Pegasus Labs
Phileo Corp
Phoenix Precision Instr
Photomation Inc
Pickard & Burns
Pneu-Hydro Valve
Power-tronic Systems
Precision Mechanisms Corp
Precision Prods (Tulsa)
Protection Controls
Racine Hydra & Machy
Ram Meter Inc
Ramsey Engrg Co
Reeves Instr Corp
Republic Flow Meters
Research Industrial Lab
Rockwell Mfg Co
Ronan Panel Co
Rotary Devices Corp
Ruge Associates
Sciaky Bros Inc
Schuco Scientific
Servonic Instruments
Servo-Tek Products
Simmonds Precision Prod
Southwestern Indus Elx
Specialties Inc
Spectra Electronics
Spectrol Electronics
Square D Co
Standard Instrument
Sterling Precision
Sunshine Scientific
Taller Cooper Div
Tapco Group
Tapeswitch Corp
Taylor Instrument
Technitrol Engrg
Telechrome Mfg Corp
Tel-Instrument Elx
Texas Instruments Inc
Thermo Electric
Trerice Co H O
Triner Scale & Mfg
Trott Electronics
Ultronix Inc
United Aircraft Prods
United Control Systems
United Electric Controls
United Shoe Machinery
Universal Match
Uniwave Inc
Varo Mfg Co
Vickers Electric Prods Div
Waltham Precision Instr
Wang Laboratories
Warco Industries
Warner & Swasey Co
Waukesha Motor Co
Weston Hydraulics Ltd
Westronics Inc
Wheelco Instruments Div
Wiancko Engrg Co
Worner Electronic Devices

COUNTERS, Alarm

Airpax Electronics
Automatic Control Co
Automatic Timing & Contls
Beckman/Berkeley Div
Berkeley Dynamics
Brooks Instrument
Bulova Research
Chrono-Log Corp
Cox Instruments
Durant Mfg
Fischer & Porter Co
General Controls
Genesys Corp
Land-Air Inc
Landell & Co
Nuclear Materials & Eqpt
Phileo Corp
Photobell Co
PIC Automation Ctls
Post Electronic
Precision Prods (Tulsa)
Presin Co
Richardson Scale Co
Southwestern Indus Elx
Spectra Electronics
Tapeswitch Corp
Tech Measurement Corp
Veeder-Root Inc

COUNTERS, Electronic, including events-per-unit-time

Abacus Inc
Aerotronic Assoc
Airborne Instr Lab
Airpax Electronics
American Electronics Inc
American Tradair
Anadex Instruments Inc
Analogue Controls Inc
Appalachian Electronic
Applied Electronics
Automatic Timing & Contls
Baird-Atomic Inc
Baranoff & Assocs
Beckman/Berkeley Div
Bendix Cincinnati Div
Berkeley Dynamics
Bill Jack Scientific
Bowmar Instrument
Bristol Co
Bulova Research
Burroughs Corp
Canadian Marconi
Chrono-Log Corp
Computer Equipment
Computer Measurements
Control Electronics
Control Equipment Corp
Davenport Mfg
Delta-F Inc
Designers for Industry
Dit/An Controls
Digitran Co
Dymec Inc
Dynapar Corp
Dynatronics Inc
Eberline Instrument
Eldorado Electronics
Electro Instruments
Electrodynamic Instr
Electronic Computer Co
Electronic Control
Electronic Controls Inc
Electronic System Dev
Electro Precision
Engineered Electronics
Erie Pacific
Erie Resistor
Exline Engrg
Fischer & Porter Co
Freed Transformer
General Controls
General Devices
GE Heavy Mil Elx Dept
General Nuclear Corp
General Time Central Res
Genesys Corp
Gyra Electronics
Hammer Electronics
Haydon Co A W
Hewlett-Packard
Instruments Inc
Kaiser Aircraft & Elx
Kearfott Div
Kellogg Switchboard
Land-Air Inc
Landis & Gyr
Link Div
Lavoie Labs
Machinery Electrification
Marconi Instruments
Mast Development
Midwest Automatic Inc
Milgo Electronic
Modernair Corp
Motorola Military Elx
Nucimco Products
National Standard Elx
Navigation Computer Corp
Northeastern Engrg
Nuclear-Chicago
Nuclear Elx Corp
Oxford Engrg Co
Performance Measurements
Phileo Corp
Photobell Co
Photocon Research
Photomation Inc
PIC Automation Ctls
Post Electronic
Potter Aeronautical
Potter Instr Co
Precision Prods (Tulsa)
Ransom Research
Redford Corp
Research Industrial Lab
Robotomics Inc
Sciaky Bros Inc
Southwestern Indus Elx
Spectrol Electronics
Standard Electric Time
Standard Instrument
Stelma Inc
Sterling Precision
Sunshine Scientific
Syracuse Electronics
Systron Corp
Systron-Donner
Taller Cooper Div
Tapeswitch Corp
Tech Measurement Corp
Telechrome Mfg Corp
Telectro Industries
Tempo Instrument
Tracerlab Inc
Transistor Specialties
Trott Electronics
Universal Match
Uniwave Inc
Valor Instruments
Veeder-Root Inc
Vemaline Products
Victoreen Instr Co
Vol-shaw Electronics
Walkirt Co

COUNTERS, Footage

Abrams Instrument
Airborne Instr Lab
American Electronics Inc
Automatic Timing & Contls
Beckman/Berkeley Div
Camera Equipt Co
Designers for Industry
Digitran Co
Dittmore-Freimuth
Ducommun Co M
Durant Mfg
Dynapar Corp
Eagle Signal
Electric Tachometer
Freed Transformer
General Controls
Gurley W & L E
Machinery Electrification
Mast Development
National Standard Elx
Olympic Instr Inc
Perkins & Son
PIC Automation Ctls
Post Electronic
Potter Aeronautical
Presin Co
Redford Corp
Standard Instrument
Stevens Mfg George
Veeder-Root Inc

COUNTERS, Mechanical, including Stroke

Acromark Co
American Data Div
American Electronics Inc
Automatic Timing & Contls
Baranoff & Assocs
Borg Equipment Div
Bowmar Instrument
Bulova Research
Cramer Controls Corp
Digitran Co
Dittmore-Freimuth
Durant Mfg
Electric Tachometer
Empire State Labs
Fischer & Porter Co
General Controls
General Devices
Haydon Instrument
Infilco Inc
Kearfott Div
Kollsman Instr Corp
Landis & Gyr
Mast Development
Monroe Components Div
North Electric Co
PIC Automation Ctls
Photocon Research
Plumb Co D S
Pneumatic-ount Inc
Precision Prods (Tulsa)
Presin Co
Richardson Scale Co
Royson Engrg Co
Spectrol Electronics
Taller Cooper Div
Tujax Engrg Corp
Veeder-Root Inc
Victor Adding Machine

COUNTERS, Predetermined, including Batch

Abrams Instrument
American Electronics Inc
Atronic Products
Automatic Electric
Automatic Timing & Contls
Beckman/Berkeley Div
Berkeley Dynamics
Beva Laboratory
Bill Jack Scientific
Bowmar Instrument
Bowser Inc
Brooks Instrument
Buffalo Meter Co
C & K Components
Computer Measurements
Control Equipment Corp
Cramer Controls Corp
Dit/An Controls
Digitran Co
Dittmore-Freimuth
Durant Mfg
Dymec
Dynapar Corp
Eagle Signal
Electro Instrument
Electro Precision
Electronic Controls Inc
Engineered Electronics
Erie Pacific
Erie Resistor
Fischer & Porter Co
Foxboro Company
Freed Transformer
General Controls
General Nuclear Corp
Gilmore Industries
Gyra Electronics
Hagen Mfg Co
Haydon Co A W
Hetherington & Berner
Hewlett-Packard
Howe Scale Co
Instruments Inc
Landis & Gyr
Librascope Div
Machinery Electrification
Mast Development
Northeastern Engrg
Oxford Engrg Co
Perkins & Son
Photobell Co
Photocon Research
PIC Automation Ctls
Post Electronic
Potter Aeronautical
Potter Instr Co
Precision Prods (Tulsa)
Presin Co
Ram Meter Inc
Ransom Research
Redford Corp
Research Industrial Lab
Richardson Scale Co
Robotomics Inc
Sciaky Bros Inc
Sentry Equipment
Sparling Instrument Div
Standard Instrument
Stevens Mfg George
Strand Engrg Co
Systron Corp
Trott Electronics
Veeder-Root Inc
Vemaline Products
Walkirt Co

COUNTERS, Revolution

Airpax Electronics
Anerac Inc
American Data Div
American Electronics Inc
Automatic Timing & Contls
Baranoff & Assocs
Barker & Williamson
Beckman/Berkeley Div
Berkeley Dynamics
Bowmar Instrument
Burroughs Corp
Coleman Electronics
Computer Measurements
Cox Instruments
Datex Corp
Digitran Co
Dittmore-Freimuth
Durant Mfg
Eagle Signal
Eastern Specialty Co
Electric Tachometer
Electro Instruments
Electro Products Labs
Electronic Controls Inc
Epic Inc
Erie Resistor
Fischer & Porter Co
Foxboro Company
Freed Transformer
General Controls

Automatic Controllers

Bristol Controllers are made in a wide variety of models including air-operated, electronic, and electric types.

Five kinds of control action: on-off, proportional, reset, derivative, and reset plus derivative, also autoset and cascade controllers, ratio controllers, pneumatic transmission, miniature instruments, program controllers, electronic potentiometers. For temperatures up to 4000F, pressure, absolute pressure, vacuum, draft, liquid level, flow, pH, humidity, time cycle and program, and control panels.

Write for Bulletins A130, DM050, A115, B226, and C305.

500 Controller Series

BRISTOL COMPANY

112 Bristol Rd., Waterbury 20, Conn.

CIRCLE 19 ON READER-SERVICE CARD

Both a

PROGRAMMER

guided by a pencil-drawn curve

NO CAMS

and a

RECORDING CONTROLLER

which superimposes a record of actual process performance and applies corrective control when performance deviates from the plotted program

PREKORDER TRADE-MARK

brings new flexibility to the automation of industrial process with closed-loop control.

1. **Pencil Programming** — No cams to cut.
2. **Superimposed Recording** — PreKorder's permanent record of process performance on a program chart overlay permits continuous visual comparison of record and chart.
3. **Programmed Limits** — To trigger alarm or shut-down circuits in case of process malfunction, just pencil allowable operating limits on the recording chart.
4. **Programmed Gain** — Varying the space between pencilled program lines varies the proportional control band or system gain.

Typical PreKorder applications are in programming temperature, pressure, power, load, flow, position, and other process variables. Both round and strip-chart models are available.

RI RESEARCH INCORPORATED

Write Dept. IC, Box 6164, Minneapolis 24, Minn.

CIRCLE 20 ON READER-SERVICE CARD

Gurley W & L E
Hasler-Tel
Haydon Instrument
Hewlett-Packard
Kearfott Div
Kerneo Instruments Co
Mast Develo. ment
North Electric Co
Photocon Research
PIC Automation Ctls
Post Electronic
Polter Aeronautical
Precision Prods (Tulsa)
Presin Co
Richardson Scale Co
Southwestern Indus Elx
Spectrol Electronics
Standard Electric Time
Stevens Mfg George
Streeter Amet
Taller Cooper Div
Uniwave Inc
Veeder-Root Inc
Walkirt Co

COUNTERS, Vehicular

American Data Div
American Electronics Inc
Baranoff & Assocs
Engler Instr
Fischer & Porter Co
Ram Meter Inc
Streeter Amet
Tapeswitch Corp
Veeder-Root Inc

CURVE FOLLOWERS (See also X-Y Recorders-Cat. 3)

Alden Electronic
Amer Meas & Control
Baird Atomic
Bristol Co
Calif Computer Prods
Curtiss Wright
Electronic Associates
Exactel Instrument
Geotechnical Corp
Gilmore Industries
Librascope Div
M-H Brown Instrs Div
Moseley Co F L
National Standard Elx
Royson Engrg Co
Sanborn Company
Sorex Inc
Taller Cooper Div
Trak Electronics
Trott Electronics
United Control Systems

DENSITY CONTROLLERS

Air Conditioning Equip
Automation Products
Autotron Inc
Barton Instrument
Brooks Instrument
Curtiss Wright
Daystrom/Weston
Fischer & Porter Co
Foxboro Company
Hagan Chem & Controls
Hallikainen Instrs
Industrial Nucleonics
Kisley & Mueller
Macbeth Corp
M-H Brown Instrs Div
Nuclear-Chicago
Nuclear Elx Corp
Nuclear Materials & Eqpt
Ohmart Corp
Photobell Co
Poole Instrs Inc
Potter Aeronautical
Precision Thermometer
Princeton Div
Radionics Inc
Ramsey Engrg Co
Reliance Instr Mfg
Spectra Electronics
Tracerlab Inc
United Engineers Inc
Worner Electronic Devices

DISPLACEMENT INDICTATORS, and/or RECORDERS, Angular and Non-linear and Motion

Amer Meas & Control
Automatic Timing & Contls
Bendix Montrose Div
Bently Scientific
Borg-Warner Controls
Brush Instruments Div
Crescent Engrg & Res
Daytronic Corp
Decker Corp
Diamond Power Specialty
Dickson Co
Digitran Co
Electro Products Labs
Engis Equipment
GRS Corp
General Radio
General Time Central Res
Gurley W & L E
Industrial Test Equip
Instrol Inc
Kearfott Div
Kauffel & Esser
Korfund Co
Luther Mfg Co
MB Electronics
Massa Div
Micro Gee Products
Micrometrical Mfg
Milton Roy Co
M-H Boston Div
M-H Brown Instrs Div
Muirhead Instrs
Norwood Controls
Performance Measurements
Photocon Research
Physical Sciences Corp
Potter Aeronautical
Sanborn Company
Specialties Inc
Sprengnether Instr
Sterling Precision
Telectro Industries
Theta Instrument
Vinson Engrg & Sales
Westronics Inc

DISPLACEMENT INDICATORS, and or RECORDERS, linear Motion

Aeronaut & Instr Div
Amer Meas & Control
Automatic Timing & Contls
Bently Scientific
Borg-Warner Controls
Brush Instruments Div
Century Elx & Instr
Computer Instruments
Convair Instruments
Crescent Engrg & Res
Daytronic Corp
Decker Corp
Electro Products Labs
Engis Equipment
Ferranti Electric
Foxboro Company
General Radio
Gurley W & L E
Industrial Test Equip
Instrol Inc
Korfund Co
Leach Corporation
Luther Mfg Co
MB Electronics
Magnetic Instr Co
Micro Gee Products
Micrometrical Mfg
M-H Boston Div
M-H Brown Instrs Div
Performance Measurements
Photobell Co
Physical Sciences Corp
Poole Instrs Inc
Potter Aeronautical
Sanborn Company
Schaevitz Engineering
Servonic Instruments
Sprengnether Instr
Tapeswitch Corp
Theta Instrument
Unilite-Dickie
Vinson Engrg & Sales
Westronics Inc
Yarnall-Waring

DISPLACEMENT PICK-UPS, Capacitance Type

Bently Scientific
Berkeley Dynamics
Columbia Research Labs
Decker Corp
Electronic Controls Inc
Korfund Co
Micrometrical Mfg
Milton Roy Co
Photobell Co
Photocon Research
Physical Sciences Corp
Radiaphone Co
Security Controls Inc
Warrick Co Chas F
Weighing & Controls

DISPLACEMENT PICK-UPS, Differential Transformer Type

Astronics Div
Automatic Timing & Contls
Baldwin-Lima-Hamilton
Bendix Montrose Div
Brush Instruments Div
Collins Corp G L
Crescent Engrg & Res
Daytronic Corp
Engis Equipment
Instrol Inc
International Resistance
Korfund Co
Magnetic Instr Co
Micrometrical Mfg
Norwood Controls
Physical Sciences Corp
Ram Meter Inc
Sanborn Company
Schaevitz Engineering
Servonic Instruments
Sheffield Corp
Swartwout Div
Vinson Engrg & Sales

DISPLACEMENT PICK-UPS, Magnetic, including Variable Reluctance

Aeronaut & Instr Div
Automatic Timing & Contls
BJ Electronics
Bently Scientific
Collins Corp G L
Consol Electrodynamics
Crescent Engrg & Res
Dynasyar Corp
Edison Industries T A
Electro Products Labs
Engis Equipment
Geotechnical Corp
Instrol Inc
International Res & Dev
Korfund Co
Land-Air Inc
MB Electronics
M-H Boston Div
Physical Sciences Corp
Potter Aeronautical
Servonic Instruments
Southwestern Indus.
Sterling Precision
Sunshine Scientific
Vinson Engrg & Sales
Wiancko Engrg Co

DISPLACEMENT PICK-UPS, Resistive

Bourns Inc
Chemiquip
Computer Instruments
Dynisco Inc
Edison Industries T A
Electric Regulator
Engis Equipment
Humphrey Inc
Korfund Co
Research Inc
Servonic Instruments
Statham Instruments
Tapeswitch Corp

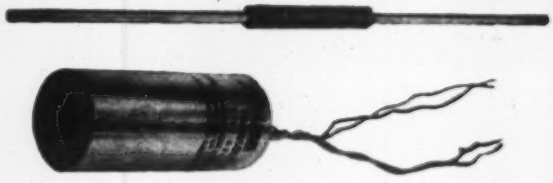
DRAFT INSTRUMENTS (See also Boiler Room instruments, also Pressure)

Bacharach Indus Instr
Bailey Meter Co
Barton Instrument
Bristol Co
Custom Comp Switches
Defender Instrument
Dwyer Mfg F W
Ellison Draft Gage
General Controls
GPE Controls
Hagan Chem & Controls
Hays Corporation
Leeds & Northrup
Moore Products Co
Reliance Instr Mfg
Republic Flow Meters
Trimount Instrument Div
Uehling Instrument
Victory Engrg Corp
Wheelco Instruments Div

DRYERS, Air or Gas

Advance Industries
Air-Shields Inc
Applied Dynamics
Cardair Div
Dryomatic Corp
Fisher Co Oscar
Gas Drying Inc
General Welding & Fab
Hankison Corp
Hayes Inc C I
Henry Valve Co
Jeffrey Mfg
Kahn & Co
Kemp Mfg C M
Modern Lab Equip
National Appliance Co
Pittsburgh Lectrodryer
Pritchard Co J F
Robbins Aviation Inc
Selas Corp of America
Sol-Rex Corp
Telectro Industries
Temperature Engrg Corp
Trinity Equipment
Uehling Instrument
US Dynamics Inc
Universal Dynamics
Van Products
Wilkerson Corp

DIFFERENTIAL TRANSFORMERS



INCREASE SENSITIVITY · SIMPLIFY DESIGN

ATCOTRAN differential transformers translate displacement or position change into linear voltages, providing reliability and infinite resolution where small motions must be accurately measured, recorded or controlled.

ATC's Experimental Kit offers all essential data and components for experimentation and development.

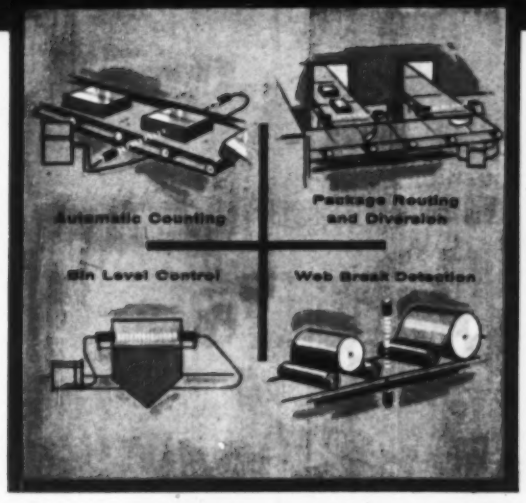
Write for free literature on automatic control systems components.

atc **AUTOMATIC TIMING & CONTROLS, INC.**

KING OF PRUSSIA, PENNA.

A Subsidiary of American Manufacturing Company, Inc

CIRCLE 21 ON READER-SERVICE CARD



SONAC ULTRASONIC,

NON-CONTACT SENSING AND SWITCHING SYSTEM

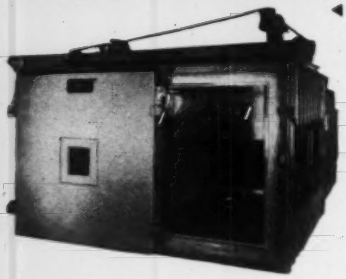
Before Sonac, sensing and switching control systems which involved breaking a beam of energy were limited by vibration, dust, smoke, steam, air contamination and too much or too little light. Sonac's ultrasonic energy "beam" is completely free of these limitations. The acoustic lens on Sonac sensors can actually be painted without affecting performance. Utilizing high frequency sound also means there are no lamps to burn out. Savings in replacement parts and maintenance time often means Sonac pays for itself. Sonac is completely transistorized, providing you with a rugged, dependable electronic circuit.

These are just a few of Sonac's many uses. Optional equipment includes reflectors for precision beam and positioning control, and coupler assemblies for use with flexible tubing for remote sensor locations. This descriptive booklet will be sent to you on request.

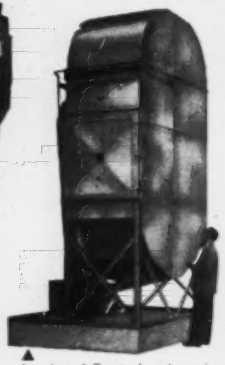
DELAVAN
Manufacturing Company
WEST DES MOINES • IOWA

CIRCLE 22 ON READER-SERVICE CARD

AR ★ THE MOST ADVANCED ENVIRONMENTAL TECHNIQUES ARE IN AR EQUIPMENT NOW



◀ Altitude, Temperature, Humidity Walk-in chambers completely automatic, factory pre-tested. Sizes from 8 cu. ft.



▲ Sand and Dust chambers include automatic dust density control and streamlined airflow design.

Designers and manufacturers of Altitude, Temperature, Humidity, Sand & Dust, Rain & Sunshine, Explosion, Special Liquid Chilling and other types of Environmental Test Equipment.

All size Chambers Available. Write for Catalog.

MEMBER OF THE ENVIRONMENTAL EQUIPMENT INSTITUTE

AMERICAN RESEARCH CORP.

FARMINGTON 8 CONNECTICUT

CIRCLE 23 ON READER-SERVICE CARD

DUST-FREE WORK ENCLOSURES & ACCESSORIES, including Rooms, Sterile Cabinets, Pre-entry Showers, Tread Mats, etc.

Baker Co Inc
Clean Tread Mat Div

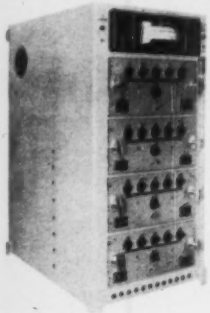
ENGINE GOVERNORS, including Internal Combustion Engines, Steam Turbines, etc.

American Bosch Arma
Bailey Co Chas M
Cash Co A W
Consol Controls
Eastern Industries
Electric Regulator
GE Apparatus Sales Div
Hamilton Standard Div
Kahn & Co
Kieley & Mueller
Synchro-Start
Stewart-Warner Corp
Taylor Instrument
Varo Mfg Co

ENVIRONMENTAL TEST CHAMBERS and EQUIPMENT, including Humidity, Pressure, Saltspray, Sand, Temperature, Ultraviolet

AC Lab Equipment
Aerotronic Assoc
Aerotest Labs
Airesearch Mfg Co
Air-Shields Inc
American Research
Anetsberger Brothers
Associated Testing Labs
Auto-Control Labs
Automatic Switch Co
Avco Corp
Bemco Inc
Blue M Electric
Bush Associates G F
Cincinnati Sub Zero
CompuDyne Corp
Conrad Inc
Consolidated Vacuum
Custom Scientific Instrs
Delta Design Inc
Development Engrg Co
Electric Hotpack
Environmental Equip
Eugene Engrg Co
Fischer & Porter Co
Fluid Technology
Forma Scientific
G S Equipment
Grain Lab Equip
Greiner Co Emil
Gyrex Corp
Harris Refrigeration

TEMPERATURE TEST EQUIPMENT

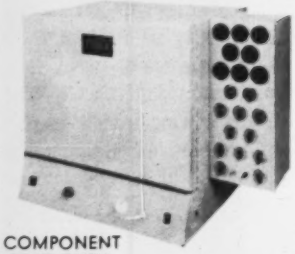


TRANSISTOR LIFE TEST OVEN

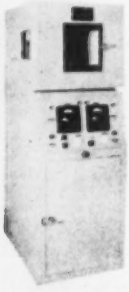
A FULL LINE OF TEST AND PRODUCTION EQUIPMENT FROM —100°F TO 1200°F

- CO_2 Hi-LO Test Chambers
- Altitude Chambers
- Hi Vacuum Ovens
- Production and Lab Ovens
- Component Test Chambers
- Conveyorized Ovens

GECO



COMPONENT TEST OVEN



ALTITUDE-TEMP HUMIDITY

MANUFACTURED BY

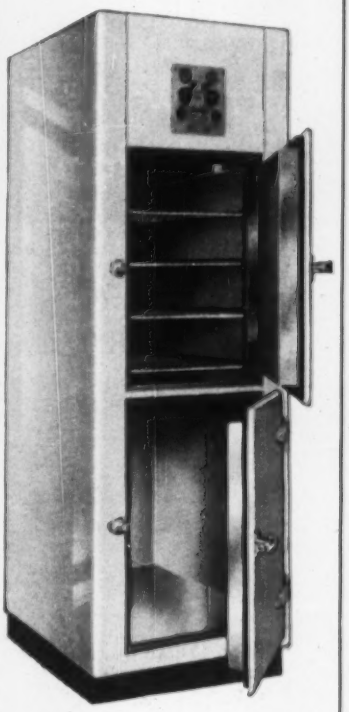
GRUENBERG ELECTRIC COMPANY INC.

9 Commercial Ave. — Garden City, N. Y.

CIRCLE 24 ON READER-SERVICE CARD

Anets Laboratory Cabinet

simulates all weather conditions for testing at precision controlled ranges of temperature and humidity . . .



Fully automatic electrical operation guards quality and cuts losses by determining actual results through precision controlled testing. Capacity over 17 cubic feet. Has temperature range from room to 180° F., and up to 95% relative humidity. Fully insulated. Inner construction and essential internal parts are of stainless steel. Outer cabinet finished in tough synthetic baked-on enamel. It is unequalled.

Also custom built electronic cabinets to order.

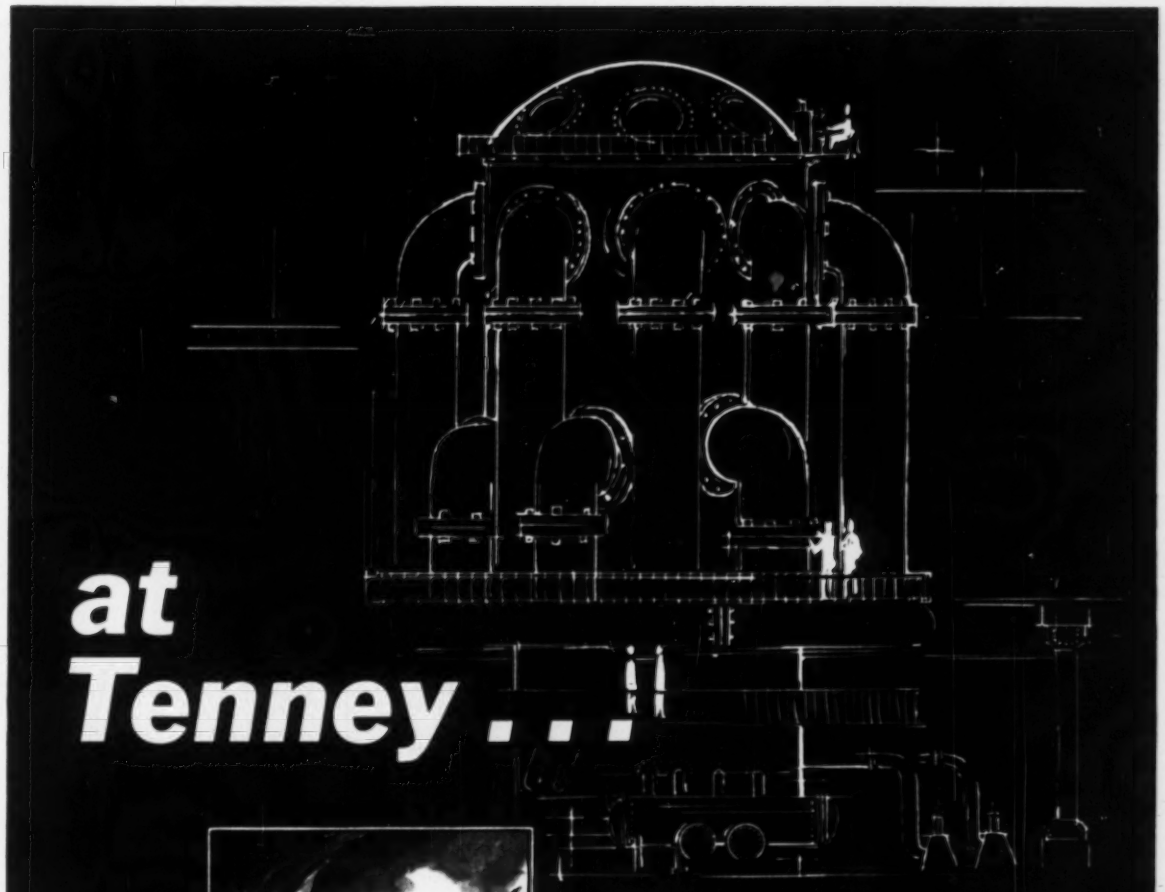
Write for Bulletin No. 117

Anets — PROCESS TESTING EQUIPMENT

Anetsberger Brothers, Inc.

186 N. Anets Dr. Northbrook, Ill.
CRestwood 2-0770 IRving 8-6200

CIRCLE 25 ON READER-SERVICE CARD



at Tenney . . .

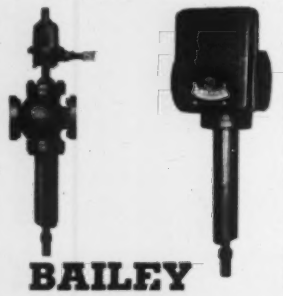
simulation of tomorrow's orbital environments is today's business

Tenney's research and development in the field of orbital simulation and hyper environments has been bringing high altitudes down to earth throughout the Space Age. No other company can match Tenney's deep engineering facilities and its successful experience with America's most important aerospace projects. Write today for further information about **your** project!

Tenney ENGINEERING, INC.

AEROSPACE DIVISION
1090 SPRINGFIELD ROAD, UNION, NEW JERSEY
PLANTS: UNION, N. J. AND WILMINGTON, N. C.

OLDEST AND LARGEST MANUFACTURER OF ENVIRONMENTAL EQUIPMENT
CIRCLE 26 ON READER-SERVICE CARD



BAILEY

AREA METER TRANSMITTERS

Transmits a signal which is directly proportional to rate of flow to indicating, recording, integrating, and/or controlling equipment at remote stations.

For rate of flow measurement of water, kerosene, gasoline, oil, tar, chemicals, distillates, and refrigerants. Measures rate of flow over a 50 to 1 range. Mounts directly in pipe line.

Signals may be transmitted either electrically or pneumatically.

Request Product Specification E22-4 for electric transmission and Product Specification P22-4 for pneumatic transmission.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd., Montreal, Canada

CIRCLE 27 ON READER-SERVICE CARD

Haskris Co
High Vacuum Equip
Huppert Co K H
International Radiant
Itemco Inc
Jan Hardware Mfg
Kollsman Instr Corp
Labline Inc
Lansdale Division
Mast Development
Meipar Inc
Missimers Inc
Modern Lab Equipment
Murphy & Miller
Nanmac Corp
National Appliance Co
NRC Equipment
Ortho Filter Co
Ozone Res & Equpt Corp
Research Inc
Sel-Rex Corp
Sheffield Corp
Shielding Inc
Soiltest Inc
Standard Cabinet Co
Statham Instruments
Strong Electric Corp
Telectro Industries
Temperature Engrg Corp
Tenney Engineering
United Aircraft Prods
United Electric Controls
Universal Dynamics Corp
Waltham Precision Instr
Webber Engrg Corp
Will Corporation
Wyle Mfg Corp

FEEDERS, Automatic Proportioning, including Granular Material

Aidlin Automation Inc
American Meter Co
Automation Devices Inc
B-I-F Industries
CompuDyne Corp
Dynametrics Corp
Kries Mfg Co
Exact Weight Scale
Fischer & Porter Co
Fuller Co
Gilmore Industries
Gump Co B F
Hills-McCanna
Howe Scale Co
Infilco Inc
Jeffrey Mfg
Lapp Insulator
Milton Roy Co
Natl Instrument Co
Ramsey Engrg Co
Richardson Scale Co
Sentry Equipment
Syntron Co
Thayer Scale Corp
United Control Systems
Wallace & Tiernan
Weighing & Controls

FIRE DETECTORS (see also Combustion Safeguards)

Accuracy Scientific
Barber-Colman
Diamond Power Specialty
Edison Industries T A
Edwards Co Inc
Falcon Alarm Co
General Controls
Grinnell Co
Hamilton Standard Div
Kidde & Co
Land-Air Inc
Monitron Co
Phoenix Precision Instr
Redford Corp
Telectro Industries
Victory Engrg Corp
Wheelco Instruments Div
Werner Electronic Devices
Wurlitzer Co

FLOW CONTROLLERS, including Flow Switches

Acme Industrial Co
Aeronaut & Instr Div
Aerotec Industries
Airesearch Mfg Co
Amer Meas & Control
American Meter Co
Automatic Control Co
Automatic Switch Co
Automatic Timing & Contls
B-I-F Industries
Bailey Meter Co
Barton Instrument
Beckman/Berkeley Div
Bendix Utica Div
Black Sivalls & Bryson
Bobrick Aero Missle
Bowser Inc
Brabender Instr C W
Bristol Co
Brooks Instrument
Buffalo Meter Co
Cash Co A W
Cash Valve Mfg
Chemiquip
Computers Inc
Consol Controls
Controls Co of Amer
Curtiss Wright
Cutler-Hammer
Daystrom/Weston
Denison Engrg Div
Drying Systems Co
Eastern Industries
Eclipse Fuel Engrg
Fischer & Porter Co
Fisher Governor Co
Flow Actuated Control
Flow Measurements
Foxboro Company
General Controls
General Regulator
GPE Controls
Hagan Chem & Controls
Hallikainen Instrs
Hastings-Raydist
Hays Corporation
Hays Mfg Co
Howe Scale Co
Infilco Inc
Instruments Inc
Johnson Service Co
Kates Co W A
Kisley & Mueller
Land-Air Inc
Leeds & Northrup
Leonard Inc Wallace D
Madden Corp
Magnetrol Inc
Manning Maxwell & Moore
Mason Neilan
McDonnell & Miller
Merceid Corp
M-H Brown Instrs Div
Moore Products Co
Natl Instruments Labs
New Jersey Meter Co
North American Mfg
Norwood Controls
Pegasus Labs
Permutit Co
Pneu-Hydro Valve
Potter Aeronautical
Racine Hydro & Machy
Redford Corp
Reliance Instr Mfg
Republic Flow Meters
Revere Corp of Amer
Rockwell Mfg Co
Scrayco Mfg
Security Valve Co
Simplex Valve & Meter
Sparling Equipment Div
Stromberg Carlson Co
Tapeswitch Corp
Taylor Instrument
Texas Instruments Inc
True-Flo Valve
United Aircraft Prods
United Control Systems
U S Gauge Div
Waugh Engrg Co
Westinghouse Air Brake

FLOW INSTRUMENTS, Granular Materials

Amer Meas & Control
Bailey Meter Co
Barton Instrument
B I F Industries
Hin-Dicator Co
Bristol Co
Curtiss Wright
Custom Comp Switches
Dynametrics Corp
Ellison Draft Gage
Fischer & Porter Co
Flow Measurements
Fluidynamics
Princeton Div
Scrayco Mfg
Security Controls Inc
Tapeswitch Corp
Wallace & Tiernan
Westronics Inc

FLOW NOZZLES

B-I-F Industries
Bailey Meter Co
Bristol Co
Foxboro Company
General Controls
Hagan Chem & Controls
Haveg Industries
Missimers Inc
Parker Aircraft Co
Permutit Co
Republic Flow Meters
Simplex Valve & Meter
Taylor Instrument

FLOW PICKUPS, Turbine Type (see also Orifice Plates, Venturi Tubes, Pitot Tubes, Flow Nozzles

Advanced Dynamics
Aero Research Instr
Automatic Timing & Contls
B-I-F Industries
Barton Instrument
C-Mar Instrument
CompuDyne Corp
Cox Instruments
Dwyer Mfg F W
Dynamic Instr
Fischer & Porter Co
Gilmore Industries
Natl Instrument Labs
Potter Aeronautical
Propulsion Dev Labs
Revere Corp of Amer
Rosemount Engrg Co
Waugh Engrg Co

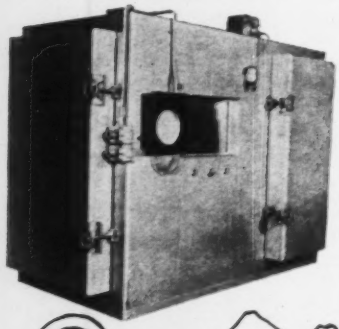
FLOW PROVERS

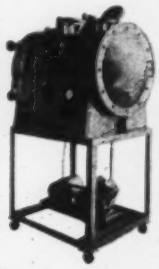
American Meter Co
Brooks Instrument
Cox Instruments
Porter Inc Geo K
Rockwell Mfg Co
Waugh Engrg Co

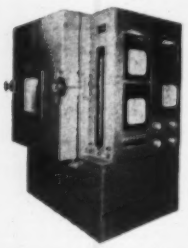
Environmental TEST CHAMBERS

Standard test chambers are expertly designed for accurate, reliable testing. Superior design and quality construction assure years of dependable service with a minimum of maintenance. Whatever the simulated condition desired, there is a Standard Cabinet designed specifically to do the job, guaranteed to give excellent performance.

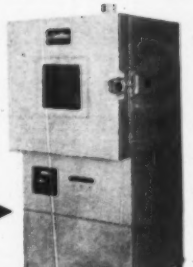
Standard Cabinet Company, a recognized pioneer in the field, has an uninterrupted history of over 18 years under the same ownership and management. It has acquired a wealth of experience and skill in the design and construction of chambers of every description.







ECONO-MODEL →



HIGH & LOW TEMPERATURE
ALTITUDE
SAND AND DUST
RAIN AND SUNSHINE
HUMIDITY • FUNGUS
SALT SPRAY
VIBRATION • EXPLOSION
WALK-IN
SPECIAL APPLICATIONS

Write today for free Bulletin No. 60

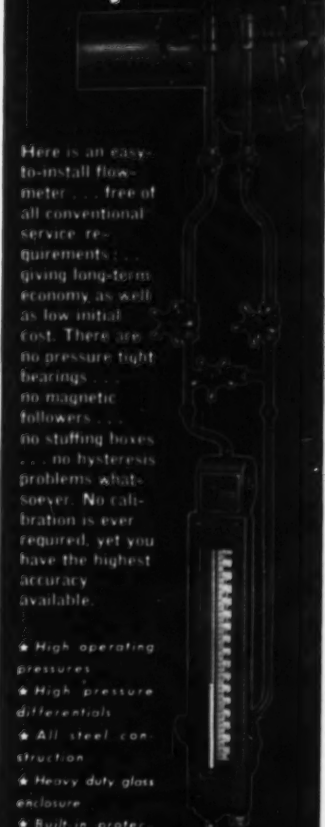
Standard CABINET COMPANY INC.
MEMBER ENVIRONMENTAL EQUIPMENT INSTITUTE
50 WASHINGTON AVENUE, CARLSTADT, N. J.

CIRCLE 28 ON READER-SERVICE CARD

UNMATCHED ACCURACY

in direct flow indication

Wherever you seek simplicity and high accuracy in flow measurement at lowest cost, the Meriam "H" Meter is the well-known answer.



Here is an easy-to-install flowmeter . . . free of all conventional service requirements . . . giving long-term economy as well as low initial cost. There are no pressure tight bearings . . . no magnetic followers . . . no stuffing boxes . . . no hysteresis problems whatsoever. No calibration is ever required, yet you have the highest accuracy available.

★ High operating pressures
★ High pressure differentials
★ All steel construction
★ Heavy duty glass enclosure
★ Built-in protection against line surges

Write for Bulletin 18A

Meriam Manometer Instrumentation
...for pressures, vacuums, flows, liquid levels

meriam

INSTRUMENT COMPANY
10920 Madison Ave. • Cleveland 2, Ohio

CIRCLE 29 ON READER-SERVICE CARD

FLOW REGULATORS, Self-Operated

Aero Supply Mfg
Aerotec Industries
Airesearch Mfg Co
Applied Dynamics
Associated Valve Co
B-I-F Industries
Bailey Co Chas M
Bailey Meter Co
Barton Instrument
Bendix Utica Div
Black Sivalls & Bryson
Bobrick Aero Missile
Bristol Co
Brooks Instrument
Bush Associates G F
Cash Co A W
Cash Valve Mfg
Computers Inc
Denison Engrg Div
Dole Valve Co
Fischer & Porter Co
Fisher Governor Co
Flow Measurements
Fluid Controls
Futurecraft Corp
General Controls
Grove Valve & Regulator
Hagan Chem & Controls
Hays Mfg Co
Kates Co W A
Kieley & Mueller
Leonard Inc Wallace D
Manning Maxwell & Moore
Moore Products Co
North American Mfg
OPW-Jordan
Parker Aircraft Co
Pneu-Hydro Valve
Potter Aeronautical
Propulsion Dev Labs
Redford Corp
Reliance Instr Mfg
Republic Mfg Co
Rockwell Mfg Co
Scott Aviation Corp
Stratco Div
Stromberg Carlson Co
Trerice Co H O
United Aircraft Prods
United Control Systems
U S Gauge Div
Victor Equipment
Vinson Engrg & Sales
Wallace & Tiernan
Westinghouse Air Brake
Weston Hydraulics Ltd

FLOW TOTALIZERS

American Meter Co
B-I-F Industries
Bailey Meter Co
Barton Instrument
Beckman/Berkeley Div
Bristol Co
Brooks Instrument
Buffalo Meter Co
Computers Inc
Cox Instruments
Dynapar Corp
Fischer & Porter Co
Flow Measurements
Foxboro Company
GPE Controls
Hagan Chem & Controls
Hallikainen Instrs
Hamilton Standard Div
Industrial Measurements
Infilco Inc
Librascope Div
M-H Brown Instrs Div
Natl Instrument Labs
Potter Aeronautical
Revere Corp of Amer
Royson Engrg Co
Sentry Equipment
Simplex Valve & Meter
Sparling Equipment Div
Wallace & Tiernan
Waugh Engrg Co

FLOW TRANSMITTERS

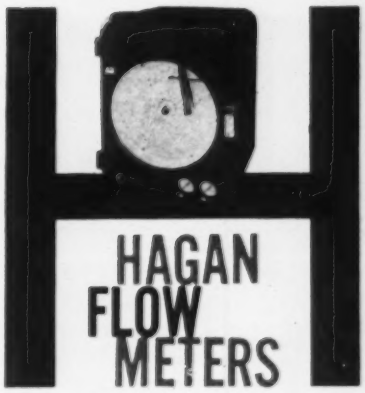
Aeronaut & Instr Div
American Meter Co
Automatic Control Co
Automatic Timing & Contls
Bailey Meter Co
Barton Instrument
B-I-F Industries
BJ Electronics
Black, Sivalls & Bryson
Boonshaft and Fuchs
Bourns Inc
Bristol Co
Brooks Instrument
Computers Inc
Conoflow
Consol Controls
Cox Instruments
Dates Corp
Daystrom/Mil Elx
Detroit Controls
Dwyer Mfg F W
Exactel Instrument
Fischer & Porter Co
Flow Measurements
Foxboro Company
General Regulator
GPE Controls
Hagan Chem & Controls
Hallikainen Instrs
Hastings-Raydist
Hays Corporation
Industrial Measurements
Infilco Inc
Manning Maxwell & Moore
Mason Neilan
M-H Brown Instrs Div
Moore Products Co
Motorola Military Elx
Natl Instrument Labs
Norwood Controls
Pace Engrg Co
Pegasus Labs
Permutit Co
Potter Aeronautical
Rahm Instruments Div
Republic Flow Meters
Revere Corp of Amer
Rosemount Engrg Co
Schutte and Koerting
Servonic Instruments
Simplex Valve & Meter
Taylor Instrument
Trans-Sonics
Ultrasonic Inc
United Electric Controls
US Gauge Div
Waugh Engrg Co
Yarnall-Waring

FLOWMETERS, Area, including Cone and Disc Type, Cylinder and Piston Type, Free Float Type

Acme Industrial Co
American Gas Furnace
Amer Meas & Control
Auto-Control Labs
Bailey Meter Co
Bayley Instrument
Bristol Co
Brooks Instrument
Buffalo Meter Co
C-Mar Instrument
Cox Instruments
DeZurik Corp
Dieta Co Henry G
Eclipse Fuel Engrg
Fischer & Porter Co
Hallikainen Instrs
Hastings-Raydist
Hays Corporation
Hoke Inc
Industrial Measurements
Manostat Corp
M-H Brown Instrs Div
New Jersey Meter Co
Permutit Co
Phoenix Precision Instr
Physical Sciences Corp
Porter Inc Geo K
Ramapo Instr Co
Republic Flow Meters
Rockwell Mfg Co
Scanivalve Sales Co
Schutte and Koerting
Sentry Equipment
Simplex Valve & Meter
Sparling Equipment Div
Victor Equipment
Wallace & Tiernan
Waukee Engineering

FLOWMETERS, Area, Orifice and Plug Type

Acme Industrial Co
Amer Meas & Control
American Meter Co
Auto-Control Labs
Automatic Timing & Contls
B-I-F Industries
Bailey Meter Co
Bristol Co
Brooks Instrument



HAGAN FLOW METERS

For recording, indicating, integrating or control of flows, Hagan Ring Balance meters offer these unique features:

1. High sensitivity at low flows.
2. Easy calibration under operating static pressures.
3. Sealing fluid density and level not critical.
4. Interchangeable ring assemblies for full scale ranges from 0.5" w.c. to 560" w.c. Adjustment on any one ring over a 7:1 differential range.
5. Built-in wide range computation and/or compensation.

HAGAN CHEMICALS & CONTROLS, INC.

DIVISIONS: CALGON COMPANY, HALL LABORATORIES

HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Fiumendosa No. 13, Milano, Italy

CIRCLE 30 ON READER-SERVICE CARD

Measure-Control Liquid Volume with NIAGARA METERS

• Chemicals • Oils & Solvents
• Cold & Hot Water • Syrups, etc.

Single nutating piston volumetric displacement metering, with integrating registers, or explosion proof Electricontact construction. Indicating, recording and controlling attachments also available. Inquire now!

BUFFALO METER CO.
INCORPORATED
2906 Main Street Buffalo, N. Y.

CIRCLE 31 ON READER-SERVICE CARD

"ABSOLUTELY COMPLETE PROCESS INSTRUMENTATION"

ROTAMETERS

#2700 FLOWRATOR METER

Push-down, pull-up and this flowmeter with the snap-in tube is all set to go. Has the amazing tempered metering tube that takes 50% higher operating pressures. Unequalled convenience and economy saves users 50 to 75% on inventory.

!NEW!NEW!NEW!

Minirator

METER

The very finest meter for low flows it has ever been this company's pleasure to announce. Choice of 1½" scale to fit the tightest crevice, or 4" scale for

unparalleled easy reading. Needless to say, this gem of a meter sports the famous F&P snap-in metering tube!

Magnarator

METER

Stamp-out flowmeter extensions with the Magnarator! No pipe turns . . . no recessed areas where products can congregate. Not merely an indicator, but a linear pneumatic transmitter as well!

Dial Indicator

METER

Makes the popular armored flowmeter more useful than ever before. Magnetic coupling converts float position to pointer position on a horizontal segmental scale of the very latest design.

UNMATCHED

FOR ACCURACY

The process accountant's friend

Unequalled accuracy over the widest range of flow! Unparalleled selection of transistorized readout devices.

Is it any wonder that the Fischer & Porter turbine meter is the natural choice of the cognoscenti for feed to batch processes . . . for in-line blending . . . for "cash-register" metering . . . and other demanding jobs?

It is a friend to all who need precise flow information

MAGNETIC FLOWMETER

AMAZING

An unobstructed length of pipe that measures the flow of even the least conductive fluids by the invisible magnetic field! Extends the range of accurate flowmetering to heretofore unbelievable limits.

YOUR ATTENTION INVITED

to the new *fully transistorized* indicator-recorder for the above-mentioned magnetic flowmeter.

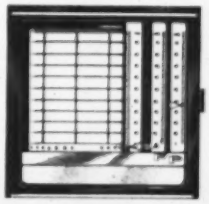
NEW

ELECTRONIC INSTRUMENTS

Have you seen the Compatible Transmitter?
Have you seen the Electronic Indicator-Recorder?
Have you seen the Electronic Controller?
Have you seen the Electronic Control Station?

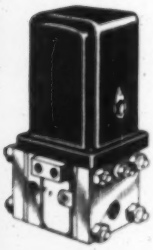
When you see the new F & P electronic control system you will find that the full promise of electronic control can at last be realized!

You can SEE the system now. You will be able to put it to work in your plant the very minute that field tests are completed. These tests are the most extensive and rigorous that we have ever devised. When our electronic instruments are released for your use, they will have been proved in actual operation.

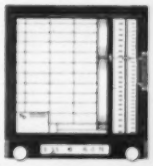


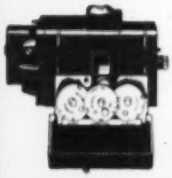
It is the determination of the house to send out nothing but what is of the highest possible quality and dependability.

PNEUMATIC INSTRUMENTS



DP TRANSMITTER
53P CONTROLLER
MINIATURE INSTRUMENTS
TEMPERATURE AND PRESSURE
BELLOWS METER





With all due modesty we direct your valued attention to the estimable selection of F & P pneumatic control instruments available for your delectation.

No mere flowmeter manufacturer, WE ARE AN INSTRUMENT COMPANY! We offer instruments to measure not merely flow, but temperature, pressure, level, density, viscosity, consistency . . . a veritable panoply!

We have instruments to convert such measurements to accurate pneumatic signals . . . to populate the control panel itself . . . a selection so wide, deep, and varied as to make the head swim and the spirits cry out.

May we be so bold as to suggest that in our collection you will find an instrument for every kink in the knottiest of control loops?

CIRCLE 32 ON READER-SERVICE CARD

FISCHER & PORTER CO.

WARMINSTER, PENNSYLVANIA

These MANUFACTURING AFFILIATES carry Fischer & Porter engineering designs to the far corners of the earth: FISCHER & PORTER LTD., WORKINGTON, CUMBERLAND, ENGLAND • FISCHER & PORTER G m b H., GROSSELLERSHAUSEN, BEI GOTTINGEN, GERMANY • FISCHER & PORTER N. V., KOMEETWEG 11, THE HAGUE, NETHERLANDS • FISCHER & PORTER Pty. LTD., 1457 MALVERN ROAD, TOORONGA, S.E. 6, VICTORIA, AUSTRALIA

BAILEY
f/b-LINE
TRANSMITTERS

For Flow, Differential Pressure, and Level Measurements

• Pneumatically transmit rate of flow or differential pressure measurements to indicating, recording, and/or controlling equipment at remote stations. Transmitters consist of a diaphragm measuring mechanism and force-balance pneumatic transmitting unit.

For measurement of steam, water, air, gases, and other fluids with ranges from 0-1 in. H_2O to 2000 in. H_2O at maximum service pressures up to 5000 psig.

Differential range of each diaphragm measuring element may be changed by a factor of 10 to 1 by a simple screwdriver adjustment.

Flow transmitter produces pneumatic signal which is directly proportional to flow, thus eliminating the need for external square-root extractors or characterizers.

Request Product Specification P22-1 for flow, P21-1 for differential pressure and P31-1 for level.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O.
Bailey Meter Company Ltd., Montreal, Canada

CIRCLE 33 ON READER-SERVICE CARD

BAILEY
Fluid Meters
FOR STEAM-LIQUIDS-GASES

• Bailey Fluid Meters are designed to indicate, record, and/or integrate the flow of steam, liquids, or gases under practically any pressure or temperature conditions.

One to four records may be made on a single 12 in. circular chart or two records of flow may be combined in the same case with two integrators or two pneumatic controllers.

Either pneumatic or electric transmission may be used when it is desired to place the Receiver Recorder at a distance from the primary element.

Request Bulletin 20.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O.
Bailey Meter Company Ltd., Montreal, Canada

CIRCLE 34 ON READER-SERVICE CARD

C-Mar Instrument
Chemiquip
Computers Inc
Cox Instruments
Dwyer Mfg F W
Eclipse Fuel Engrg
Ellison Draft Gage
Fischer & Porter Co
Fluidynamics
Hagan Chem & Controls
Hallikainen Instrs
Hays Corporation
King Engrg
Martin & Co H S
Meriam Instr Co
M-H Brown Instrs Div
Natl Instrument Labs
Physical Sciences Corp
Porter Inc Geo K
Propulsion Dev Labs
Ramapo Instr Co
Republic Flow Meters
Robinson Orifice
Rockwell Mfg Co
Schutte and Koerting
Simmonds Precision Prods
Simplex Valve & Meter
Sparling Equipment Div
Taylor Instrument
Wallace & Tiernan

FLOWMETERS, Electro-Magnetic, including Turbine

Air Conditioning Equip
Bendix Pioneer-Central
Bowser Inc
Bristol Co
C-Mar Instrument
CompuDyne Corp
Computers Inc
Cox Instruments
Crescent Engrg & Assocs
Fischer & Porter Co
Foxboro Company
Flow Measurements
Gilmore Industries
Hays Corporation
Motorola Military Elx
Physical Sciences Corp
Potter Aeronautical
Revere Corp of Amer
Rockwell Mfg Co
Taylor Instrument
Vinson Mfg Co
Waugh Engrg Co

FLOWMETERS, Inferential Type, including Orifice, Nozzle, Pitot, Venturi; for Air, Gas, Liquid or Steam; Indicating and/or Recording

Advanced Dynamics
Aero Research Instr
Air Conditioning Equip
Amer Meas & Control
B-I-F Industries
Bailey Meter Co
Barton Instrument
Boonshaft and Fuchs
Bristol Co
Brooks Instrument
C-Mar Instrument
Commercial Iron Works
Cox Instruments
Ellison Draft Gage
Fischer & Porter Co
Fluidynamics
Foster Engineering Div
Foxboro Company
Hagan Chem & Controls
Hammel-Dahl
Hastings-Raydist
Hays Corporation
Infilco Inc
King Engrg
Mason-Neilan
Meriam Instr Co
M-H Brown Instrs Div
Natl Instrument Labs
Norwood Controls
Physical Sciences Corp
Porter Inc Geo K
Propulsion Dev Labs
Ramapo Instr Co
Republic Flow Meters
Robinson Orifice
Rockwell Mfg Co
Rosemount Engrg Co
Sentry Equipment
Simmonds Precision Prods
Simplex Valve & Meter
Taylor Instrument
Trimount Instrument Div
United Aircraft Prods
Victor Equipment

FLOWMETERS, Magnetic

Bowser Inc
C-Mar Instrument
Cox Instruments
Fischer & Porter Co
Foxboro Company
Hays Corporation
M-H Brown Instrs Div
MSA Research Corp
OPW-Jordan
Performance Measurements
Physical Sciences Corp
Rockwell Mfg Co
Schutte and Koerting
Simmonds Precision Prods

FLOWMETERS, Open Channel, including Flume, V-notch, Weir (see also Waste)

Bailey Meter Co
B-I-F Industries
Bristol Co
Brooks Instrument
Cox Instruments
DeZurik Corp
Fischer & Porter Co
Foxboro Company
Hagan Chem & Controls
Infilco Inc
M-H Brown Instrs Div
Physical Sciences Corp
Republic Flow Meters
Rockwell Mfg Co
Simplex Valve & Meter
United Aircraft Prods

FLOWMETERS, Positive Displacement, including Consumer Gas, Nutating Pistons or Disc, Oscillating Pistons, Propeller, Reciprocating Pistons and Rotary Piston Water Meters, etc.

Acme Industrial Co
American Meter Co
Auto-Control Labs
Badger Meter Mfg
B-I-F Industries
Bowser Inc
Buffalo Meter Co
Conrair Instruments
Cox Instruments
Decker Corp
Fischer & Porter Co
Gurley W & L E
Hagan Chem & Controls
Hays Corporation
Hetherington & Berner
Industrial Measurements
Lapp Insulator
Madden Corp
Neptune Meter
OPW-Jordan
Physical Sciences Corp
Porter Inc Geo K
Potter Aeronautical
Revere Corp of Amer
Rockwell Mfg Co
Roots-Connersville
Sentry Equipment
Sparling Equipment Div
Victor Equipment

FLOWMETERS, Sight

Bowser Inc
Brooks Instrument
C-Mar Instrument
Cox Instruments
Dietz Co Henry G
Eclipse Fuel Engrg
Fischer & Porter Co
Fischer Scientific
GRS Corp
Greiner Co Emil
Infilco Inc
McIntosh Equipment
New Jersey Meter Co
OPW-Jordan
Patrometer Corp
Schutte and Koerting
Selas Corp of America
Uehling Instrument
Victor Equipment

FLOWMETERS, True Mass

Bendix Pioneer-Central
Black Sivalls & Bryson
Cox Instruments
Crescent Engrg & Res
Decker Corp
Dynisco Inc
GE Apparatus Sales Div
Gilmore Industries
Hagan Chem & Controls
Hastings-Raydist
Potter Aeronautical
Propulsion Dev Labs
Revere Corp of Amer
Simmonds Precision Prods
Trans-Sonics Inc

FLOWMETERS, Vane Type

Air Conditioning Equip
Bailey Meter Co
Bendix Pioneer-Central
Bowser Inc
Bristol Co
Eclipse Fuel Engrg
Fischer & Porter Co
Illinois Testing Labs
New Jersey Meter Co
Sentry Equipment
Simmonds Precision Prods
Standard Controls Inc

FURNACE CONTROL SYSTEMS (see Boiler Room Instruments, also Combustion Safeguards)

Aeronaut & Instr Div
Astra Technical Instr
Automatic Timing & Contls
Bailey Co Chas M
Bailey Meter Co
Bristol Co
Controls Co of Amer
Cutler-Hammer
Daystrom/Weston
Diamond Power Specialty
Dwyer Mfg F W
Eclipse Fuel Engrg
Ellison Draft Gage
Energy Controls
Farris Engrg Corp
Foxboro Company
General Controls
GE Apparatus Sales Div
General Regulator
GPE Controls
Hagan Chem & Controls
Industrial Instrs Inc
Leeds & Northrup
Kieley & Mueller
Mefferine O T
Moore Products Co
North American Mfg
Panellit Inc
Permutit Co
Pitney Inc
Reliance Instr Mfg
Republic Flow Meters
Standard Instrument
Stromberg Carlson Co
Syracuse Electronics
Thermo Electric
Thermon Instrument
WE-Director Systems
Westronics Inc
Wheelco Instruments Div

GAS ANALYZERS, Air

Analytic Systems
Axler Associates
Bacharach Indus Instr
Beckman/Sci & Proc Div
Consolidated Vacuum
Cramer Controls Corp
Crump Instrument
Davis Instruments
Ellison Draft Gage
Fischer & Porter Co
Fisher Scientific
Fuller Co
Gelman Instrument
Gow-Mac Instrument
Hagan Chem & Controls
Industrial Instrs Inc
Industrial Instrs Engrg
Interelectronics
Land-Air Inc
Lee Engrg Co
Mine Safety Appliances
Natl Instrument Labs
National Spectrographic
Permutit Co
Phoenix Precision Instr
Thermco Instrument
Victory Engrg Corp
Waters Associates
Wheelco Instruments Div

GAS ANALYZERS, Ammonia

Analytic Systems
Beckman/Sci & Proc Div
Baird-Atomic Inc
Crump Instrument
Davis Instruments
Epic Inc
Fischer & Porter Co
Fisher Scientific
Gow-Mac Instrument
Hallikainen Instrs
Industrial Instrs Inc
Industrial Instrs Engrg
Instrument Corp of Amer
Johnson-Williams
Lee Engrg Co
Mine Safety Appliances
Permutit Co
Ranarex Div
Thermco Instrument
Universal Match

GAS ANALYZERS, Carbon Dioxide, and/or Carbon Monoxide

Advanced Instruments
American Data Div
American Electronics Inc
Analytic Systems
Bacharach Indus Instr
Baird-Atomic Inc
Beckman/Sci & Proc Div
Cambridge Instrument
Crump Instrument
Davis Instruments
Defender Instrument
Dument Labs Allen B
Dwyer Mfg F W
Ellison Draft Gage
Epic Inc
Fischer & Porter Co
Fisher Scientific
Gelman Instrument
Gow-Mac Instrument
Greiner Co Emil
Hagan Chem & Controls
Hays Corporation
Industrial Instrs Inc
Industrial Instrs Engrg
Instrument Corp of Amer
Instr Development Co
Instrumentation Assoc
Interelectronics
Kruger Instrs Harold
Laboratory Equip Corp
Leeds & Northrup
Lee Engrg Co
Mine Safety Appliances
Permutit Co
Republic Flow Meters
Taller-Cooper Div
Thermco Instrument
Uehling Instrument
Universal Match
Victory Engrg Corp
Wheelco Instruments Div

GAS ANALYZERS, Hydrogen Sulphide, Nitric Oxide, etc.

American Electronics Inc
Analytic Systems
Bailey Meter Co
Beckman/Sci & Proc Div
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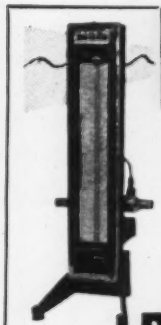

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Vol-O-Flo Linear Gas Flowmeter

For Laboratory Plant Special Equipment

ACCURATE • RUGGED • ADAPTABLE

Meters using laminar flow elements have the highest potential accuracy possible. Accuracy is independent of pipe run. Convenient to use. Available for table, pipe, wall, or flush mounting. Specials to order: Pressure to 2000 psig, temperature to 500° F, overflow checks, H-assemblies. Dial indicator type (Model 30) and element only (Model 10, for customer secondary device) are also available.

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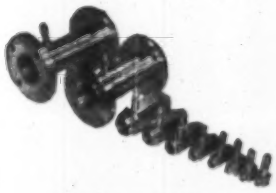
Flow Meters



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Accuracy ½% of reading. Ranges 0.01 to 10,000 gpm. Single bearing design, easily disassembled for cleaning without affecting calibration. Readouts shown below.

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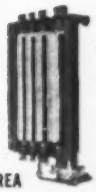

VARIABLE AREA

Flowmeters, accuracy ½% and 1% of reading. Single and multiple stages. For air, oil, water, fuel. Ranges 5 to 130,000 pph.

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For air and liquid flow. Made to A.S.M.E. specifications. Twenty sizes available.

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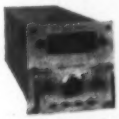
There is a Cox Instrument for just about every flow measurement requirement. Since 1912 Cox has been a pioneer in the development of *precision* measuring instruments. Cox application engineers are available to assist you on any flow measurement requirement.

Electronic Flow Indicators



DIGITAL FLOW INDICATOR

Single channel with built-in frequency converter. Accuracy ¼% of scale. Panel or portable mounting, size 7x7x15.

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Multiple channel with built-in frequency converter. Accuracy ¼% of scale. Rack mounting. Available in explosion-proof model.

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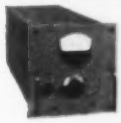

ANALOG FLOW INDICATOR

Single channel. Accuracy 1% or 2% of scale. Built-in frequency converter. Size 7x7x15.

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Multiple channel. Accuracy 1% or 2% of scale. Built-in frequency converter. Rack mounting. Available in explosion-proof model.

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PRIMARY FLOWMETER CALIBRATOR

Precision weight-time primary flow standard for liquid flowmeter calibration. Seven standard models: 5 to 150,000 pph. Repeatability and correlation ±0.1%. Easy to operate.

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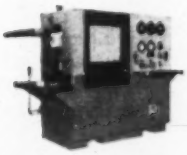

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Uses a precision variable area flowmeter as a secondary standard for calibration of other flowmeters. Accuracy ¼, ½ or 1% of reading.

COMPARISON CALIBRATOR

Turbine

Uses precision turbine flowmeter as secondary standard for calibration. Accuracy ½% of reading.

COMPARISON CALIBRATOR

Air

Secondary standard for air flowmeter calibrations. Uses precision flow nozzles. Accuracy ½% of reading.

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Continuous and Portable units

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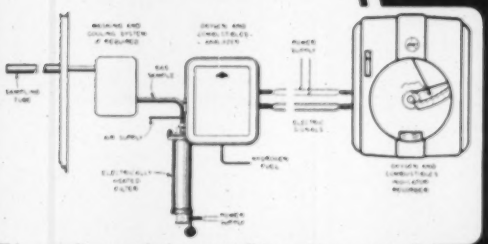
BAILEY METERS

GAS ANALYZERS

for Oxygen & Combustibles Content of Gases



This sampling, analyzing, recording and/or controlling system provides continuous and independent analysis of oxygen and/or combustibles. Analyzer uses hydrogen and/or air for catalytic combustion of sample. Minimum range: 0-5%; maximum range: 0-25%.

Ideal combustion guide and safety device for furnaces, kilns, and heaters. Analyzes and controls output from atmosphere generators.

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- DETECTOR CELLS*
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  - — Less than 1% Error
  - — Nitrogen Eluting Gas
  - — Non-destructive to Sample

*Indicates new product

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GAS ANALYSIS BY THERMAL CONDUCTIVITY SINCE 1935

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with 150 years of experience in the measurement of gases

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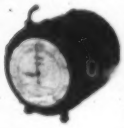
These Parkinson Cowan volume test meters are of the wet-type, which contain a drum with a horizontal axis that rotates more than half immersed in water, thus providing a greater control of accuracy. Each instrument is easily dismantled for cleaning and servicing. You can rely on a PC gas test meter to provide years of true test measurement.



TYPE A	TYPE B	TYPE E-40
Compact Test Meter With Large Capacity	Portable Test Meter For All Laboratory Work	Heavy Duty Type For Oil & Chemical Use
Capacity: 20 cu. ft./hr.	**Capacity:** 10 cu. ft./hr.	**Capacity:** 40 cu. ft./hr.
Accuracy: ±0.1%	**Accuracy:** ±0.25%	**Accuracy:** ±0.25%
Case: Tinned brass	**Case:** Plated Copper	**Case:** Stainless Steel
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Wt.: 23 lbs.	**Wt.:** 10 lbs.	**Wt.:** 18 lbs.
Connections: Elbow for push-on tubes; internal thread—⅛"	**Connections:** Push-on rubber tubes; internal thread—⅛"	**Connections:** Push-on ¾" tubing
Price: $275.00	**Price:** $185.00	**Price:** $250.00

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ACCURATE AND SENSITIVE HUMIDITY AND TEMPERATURE RECORDINGS

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SERDEX low cost instruments

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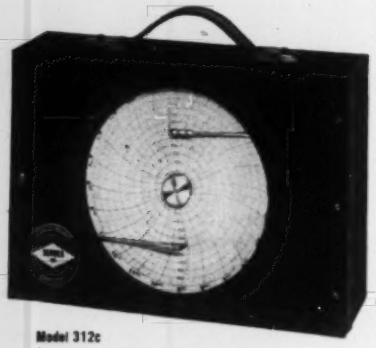

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Patented animal membrane sensing element guarantees accuracy, within ±5% over range of 15% to 95% relative humidity, within temperature range of 32°F to 130°F. Very low lag constant; reacts almost immediately to changes.

Temperature guaranteed accurate within ±2°F over range of 0°F to100°F.

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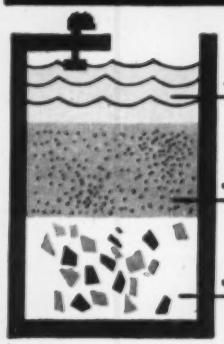

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Division of
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LEVEL CONTROLLERS, INDICATORS and/or RECORDERS, Liquid - (see also Valves, Float)

Aero Supply Mfg
Aeronaut & Instr Div
Aerotec Industries
Allen-Bradley
American Meter Co
Associated Valve Co
Atwood & Morrill Co
Automatic Control Co
Automatic Timing & Contls
Automation Products
Bailey Co Chas M
Bailey Meter Co
Barber-Colman
Barton Instrument
Belfort Instrument
Bendix Pioneer-Central
Berger & Sons C L
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Bin Dicator Co
Black, Sivalls & Bryson
Bowser Inc
Bristol Co
Brooks Instrument
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Consol Controls
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Controls Co of Amer
Convair Instruments
Cramer Controls Corp
Crosby-Ashton
Curtiss Wright
Cutler-Hammer
Davis Regulator
DeZurik Corp
Diamond Power Specialty
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Dietz Co Henry G
Electronic Control
Exactel Instrument
Falcon Alarm Co
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Flow Measurements
Forma Scientific
Foster Engineering Div
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G E Specialty Control
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Henry Valve Co
Industrial Instrs Inc
Industrial Nucleonics
Inflico Inc
Instruments Inc
Jerguson Gage & Valve
Jo-Bell Products
Johnson Corp
Keckley Co O C
Kieley & Mueller
King Engrg
Leeds & Northrup
Leslie Co
Liquidometer
Machinery Electrification
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Magnetrol Inc
Manning Maxwell & Moore
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Nacimco Products
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Norwood Controls
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Nuclear Elx Corp
OPW-Jordan
Ohmart Corp
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Parker Aircraft Co
Penberthy Mfg Co
Petrometer Corp
Phillips & Co H A
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Powers Regulator
Powertron Ultrasonics
Precision Thermometer
Presin Co
Princeton Div
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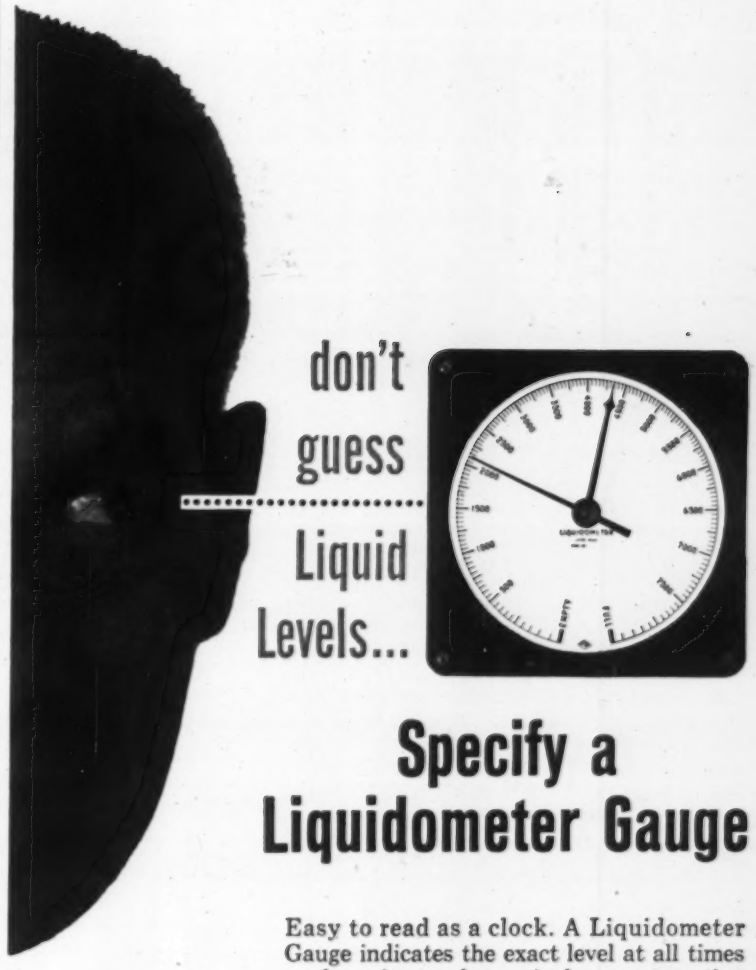
Reliance Instr Mfg
Republic Flow Meters
Revere Corp of Amer
Security Controls Inc
Shand and Jurs
Sierra Electronic Corp
Simmonds Aerocessories
Simmonds Precision Prods
Simplex Valve & Meter



Specify a Liquidometer Gauge

Easy to read as a clock. A Liquidometer Gauge indicates the exact level at all times ... shows it at a glance. And gauge operation is completely automatic – as far as 250 feet from the tank – without need for auxiliary power of any kind.

A Liquidometer Tank Gauge measures virtually any liquid. It's simple to install – requires no maintenance. Many have provided over 30 years of efficient, dependable service. All are approved by Underwriters' Laboratories and Factory Mutual.

Whether your gauging needs require an automatic Liquidometer Gauge, a hydrostatic Levelometer or a tank-site-indicating Direct Reader, you'll get the best by specifying Liquidometer. For complete details write Dept. E.

Since 1920 ...of proven quality

THE LIQUIDOMETER CORP.

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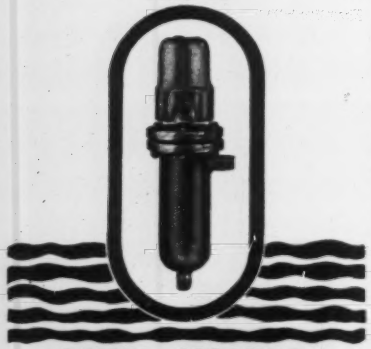

LEVEL MASTER•

The UNFAILING Liquid Level Control!

The ability to function with *continuous, sensitive control* with liquids is the standout feature of Level Master. The "brain" of Level Master is the unique Bell Magnetic Proximity switch incorporating a permanent Alnico V magnet that responds instantly to changes in liquid level!

- *Models for all types of liquids.*
- *Horizontal, vertical, external mountings.*
- *Precision engineered for long life operation.*

For full information consult your Level Master representative or write directly to:

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Phone GArden 5-0240

CIRCLE 48 ON READER-SERVICE CARD

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Stromberg Carlson Co
Swartwout Div
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Texas Instruments Inc
Tracerlab Inc
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United Engineers Inc
U S Gauge Div
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Victory Engrg Corp
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Wallace & Tiernan
Warrick Co Chas F
Weighing & Controls
WE-Director Systems
Westronics Inc
Wheelco Instruments Div
Worner Electronic Devices
Yarnall Waring

LEVEL INDICATORS and/or RECORDERS, Bin and Bulk Material

Aeronaut & Instr Div
Automatic Timing & Contls
Automation Products
B-I-F Industries
Barber-Colman
Bin-Dicator Co
Bristol Co
Budd Co Inst Div
CompuDyne Corp
Convair Instruments
Cutler-Hammer
Dietert Co
Electro Products Labs
Fischer & Porter Co
Fuller Co
General Controls
Gilmore Industries
Hagan Chem & Controls
Industrial Nucleonics
Instruments Inc
Jeffrey Mfg
Jerber Engineering
Jerguson Gage & Valve
Johnson Corp
Magnetic Instr Co
Milton Roy Co
Motorola Military Elx
Nuclear Corp of Amer
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Weighing & Controls
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LEVEL TRANSMITTERS

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Automatic Timing & Contls
Automation Products
B-I-F Industries
Bailey Meter Co
Barton Instrument
Bendix Pioneer-Central
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Bourns Inc
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Brooks Instrument
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Consol Controls
Consair Instruments
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GPE Controls
General Regulator Corp
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Hays Corporation
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Industrial Nucleonics
Instrol Inc
Instruments Inc
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Rahm Instruments Div
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Republic Flow Meters
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Shand and Jurs
Sierra Electronic Corp
Simplex Valve & Meter
Swartwout Div
Taylor Instrument
Telechrome Mfg Corp
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Tracerlab Inc
Trans-Sonics Inc
Trimount Instrument Div
Uehling Instrument
Ultradyne Inc
United Electric Controls
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Vinson Mfg Co
Weighing & Controls
Yarnall Waring

LEVELLING SADDLES for Flowmeters, etc.

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Commercial Iron Works
Daniel Orifice Fitting
Robinson Orifice
Rockwell Mfg Co

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Beatty Scientific
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Computer Instruments
Daytronic Corp
Dillon & Co W C
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Emery Co A H
Foxboro Company
Gilmore Industries
High Temperature Instrs
Kentucky Co
Micro-Test Inc
Morehouse Machine
Performance Measurements
Photocon Research
Revere Corp of Amer
Schaevitz Engineering
Statham Instruments
Stavid Div
Streeter Amet
Tapeswitch Corp
Taylor Instrument
Vinson Mfg Co
Weighing & Controls

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Acme Industrial Co
Airborne Instr Lab
Allina Corp
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Amer Kloeckner-Moeller
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Automation Devices Inc
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Custom Comp Switches
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Giannini Controls Corp
GPE Controls
Hughes Industrial Sys
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Magnasyne Corp
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Trott Electronics
United Control Systems
United Electric Controls
United Shoe Machinery
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Vemaline Products
Vickers-A & E Center
Vickers Electric Prods Div
Wang Laboratories
WE-Director Systems

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Automatic Timing & Contls
Bowser Inc
Exact Weight Scale
Gump Co B F
International Instrument
Mettler Instrument
Natl Instrument Co
Pneumatic Scale Corp
Red Point Corp
Richardson Scale Co
Thayer Scale Corp
Uehling Instrument

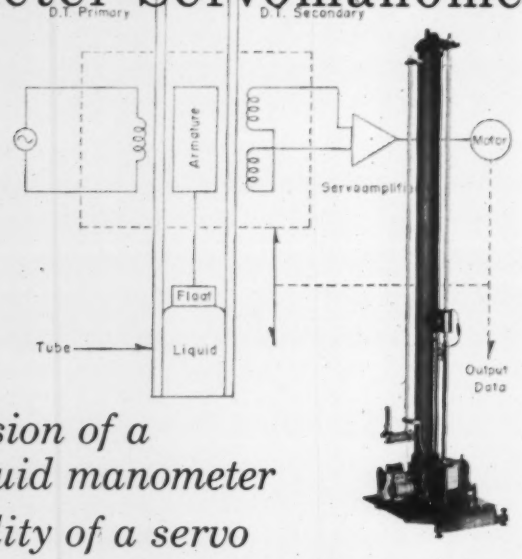
MANOMETERS, Electrical Contact

Consol Electrodynamics
Dynametrics Corp
Ellison Draft Gage
Fischer & Porter Co
International Instrument
Jerber Engineering
Meriam Instr Co
Philadelphia Scien Glass
Pic Automation Cnls
Rosemount Engrg Co
Scientific Instrument
Trimount Instrument Div
United Engineers Inc

MANOMETERS, Glass, including Micro, Raised Well Type, Remote Reading, U-Tube, Test, etc.

B-I-F Industries
Bacharach Indus Instr
Bailey Co Chas M
Defender Instrument
Dietz Co Henry G
Dwyer Mfg F W
Ellison Draft Gage
Exactel Instrument
Fischer & Porter Co
Fisher Scientific
Flow Corporation
Geotechnical Corp
Greiner Co Emil
Hass Instrument

Exactel Servomanometers



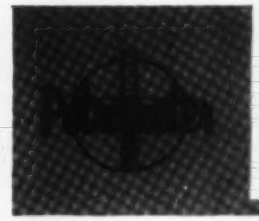
precision of a liquid manometer
...utility of a servo

Illustrated is Exactel Servomanometer Model C560IN-D with 60 inch range, Analog Temperature Compensation and digital output with synchro transmitter. Servomanometers are available in single or dual construction with five ranges to 120 inches and 25 optional features. The instruments are operational in nature and have been proven in a wide range of applications to combine exceptional accuracy, simplicity and the reliability required for industrial installation. Exactel's sixteen page Bulletin 500 describing new Servomanometer techniques and many new applications is available on request.

EXACTEL INSTRUMENT COMPANY
185 Evelyn Avenue / Mountain View, California / YO 8-6558

CIRCLE 49 ON READER-SERVICE CARD

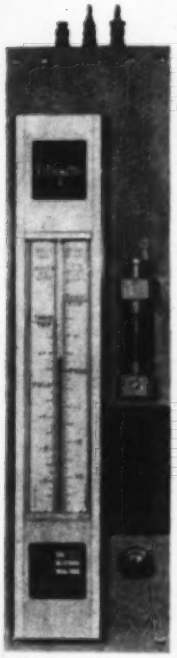
When Using This Guide look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).



PETROMETER CORPORATION

43-22 TENTH STREET • LONG ISLAND CITY 1, N. Y.
Telephone STillwell 4-8042

PETROMETER SERIES 1700 LIQUID LEVEL INDICATORS

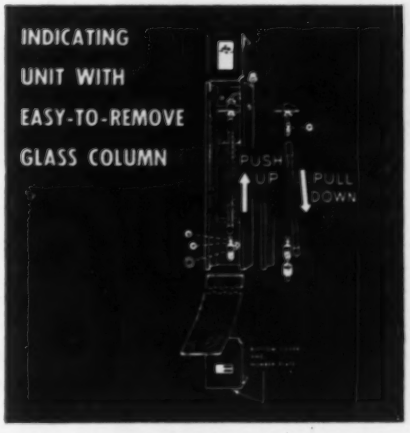


Operating on the sound principle of hydrostatic pressure, Petrometer Series 1700 indicators give accurate, reliable indication of liquid depth or volume from a remote point. They can be used to measure any liquid in any shape tank at distances up to ½ mile.

Series 1700 indicators are available in many models for automatic or manual aeration.

The unique design features, which provide outstanding operation and simplified installation and maintenance include:

- Fast acting valve, eliminating indication lag in high rate filling processes and also functioning as a rapid "zeroing" device for checking the zero point of the indicator scale.
- All functional parts are on the instrument panel —no need to mount separate parts on the wall.
- Integral, one-piece indicating unit.
- Easy removal or replacement of scale . . . inserts in channel of indicating unit.
- Simple installation of glass column permits quick removal for cleaning or replacement.



HOW TO ORDER THE RIGHT INDICATOR

Specify:

(a) The Vertical Depth (in inches) of the storage tank.
(b) The Specific Gravity of the liquid to be stored.
(c) Whether vented or under pressure.
(d) Whether compressed air is available.
(e) What accessories are desired.

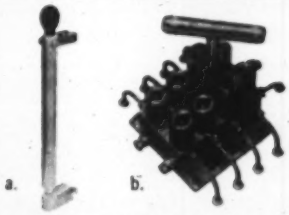
Accessories

AERATOR VALVE Used for air purging of transmission lines. Also functions as rapid zeroing device. Comes apart for cleaning and servicing without tools.

BUBBLER Consists of glass bowl filled with non-freezing liquid. Provides visual check on aeration. Used for continuous automatic indication where compressed air is available.

FLOW INDICATOR Consists of graduated transparent tube with floating ball. Has needle valve adjustment. Permits accurate, measurable control of aeration. Used where compressed air is available.

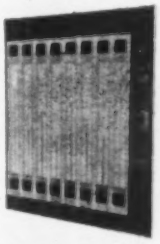
MANUAL COMPRESSOR Used where no source of compressed air is available. It is a combination small pressure tank and efficient pump. Holds sufficient air for purging.



a. **HAND PUMP** Used where no source of compressed air is available. The Hand Pump is an efficient pump, which can be serviced in minutes to replace packings or check the valve.

b. **MANIFOLD VALVES** Petrometer single or duplex Pneumatic Manifold Valves for instrument and control systems feature fool-proof manifold operation, quick, air-tight action, compactness and efficiency. One liquid depth indicator can be made to serve several tanks through a Petrometer Manifold Valve.

MANOMETER CHECK VALVE Protects against loss of indicating fluid when over-range pressures are encountered. The new Model 1636 valve is positive acting during either sudden surges or gradual increases in pressure. An original, patented O-Ring diaphragm seals against the valve cone at over-range pressures. A special Industrial Model in stainless steel withstands 500 PSI, and seals any liquid from light gauge oil to mercury.



MULTIPLE INDICATOR PANELS

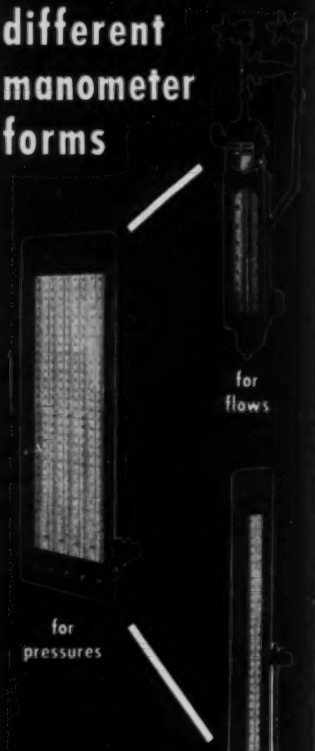
Other Products:

- High and Low Liquid Level Alarms
- Specific Gravity Indicator
- Portable Instrument Line "Blow-Out Guns"

CIRCLE 50 ON READER-SERVICE CARD

UNMATCHED ACCURACY

...in over 1000 different manometer forms



Add to the uncompromising accuracy of Meriam Manometers the availability of a specific form most suited to the application. The result is simple, practical and permanently accurate instrumentation . . . at lowest cost . . . for every process and laboratory need.

Send for Bulletin C-12.

Meriam Manometer Instrumentation

...for pressures, vacuums, flows, liquid levels.

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Labglass Inc
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Manostat Corp
Martin & Co H S
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Moeller Instr Co
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Nurnberg Scientific
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Porter Inc Geo K
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Specialties Inc
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Uehling Instrument
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Vapor Recovery Systems
Wallace & Tiernan
Welch Mfg Co W M

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Defender Instrument
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Ellison Draft Gage
Exactel Instrument
Hastings-Raydist
Jerber Engineering
Kollsman Instr Corp
Meriam Instr Co
Natl Instrument Labs
Taylor Instrument
Trimount Instrument Div
Uehling Instrument
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Century Elx & Insts
Crump Instrument
Cunningham Son & Co
Datex Corp
Diamond Power Specialty
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Electro Devices (Mo.)
Electro Instruments
Electro-Mechanical Res
Fenwal Inc
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Monitron Co
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Southwestern Indus Elx
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Thermo Electric
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Waterman Products

MOTOR CONTROLLERS AND REGULATORS

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Airpax Electronics
Allen-Bradley
Allis-Chalmers
Amer Kloeckner-Moeller
Amer Meas & Control
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Assembly Products Inc
Automatic Control Co
Automatic Timing & Contls
Black, Sivalls & Bryson
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Dalmotor Div
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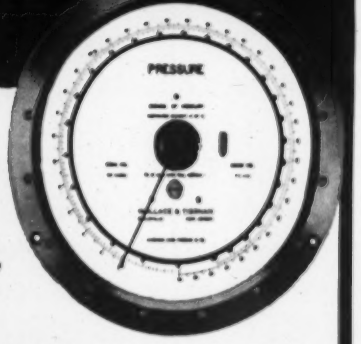
Regent Controls
Sciaky Bros Inc
Southwestern Indus Elx
Square D Co
Stromberg Carlson Co
Superior Electric Co
Texas Instruments Inc
United Control Systems

PRESSURE Measurement ACCURACY 0.1%



W&T PRECISION DIAL MANOMETER, FA-145

Ranges: All ranges from 0-120 inches water through 0-300 inches Hg. in two revolutions — 45 inch scale.

Write today for Publication No. A-96-r.48-A

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In Canada: Wallace & Tiernan, Ltd., Toronto

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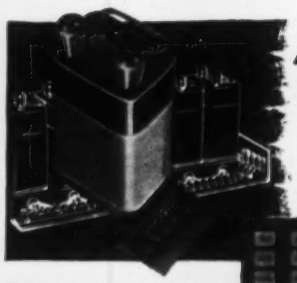
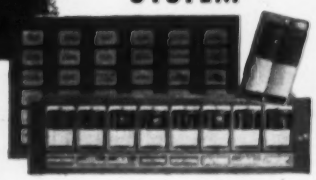


New TEL-ALARM "Unitized" ANNUNCIATOR SYSTEM



- WIDE VARIETY OF CIRCUIT ARRANGEMENTS TO MEET ANY NEED
- HERMETICALLY SEALED UNITS—CORROSION PROOF
- BACKLIGHTED NAMEPLATES OR TURRET LENSES
- STANDARDIZED FOR EASY USE—LOWER COST

HERE is the first "unitized" annunciator. Tel-Alarm incorporates a basic relay unit with many different circuit arrangements available. Tele-Alarm is completely standardized for low cost and easy maintenance.

Tel-Alarm is corrosion proof, hermetically sealed and meets any Class I, Division 2 application. The units are completely self-contained—no complicated wiring—and merely plug into a standard Tel-Alarm chassis. Simple and easy to install.

You can get backlighted nameplates or the new Tel-Alarm *giant* turret lenses for greater visibility. Check into Tel-Alarm today.

Send for your free copy of Bulletin 440

Contains complete circuit sequence diagrams, full range of models for every need.

Tigerman Engineering COMPANY

4332 North Western Ave., Chicago, Ill.

"Protecting America's Industry"

CIRCLE 53 ON READER-SERVICE CARD

Buy ONE Manometer

Use it for ALL FLUIDS!

- Dynametrics U-Tube and Single Tube precision-built Manometers feature universal compatability with every manometer fluid. No need to change wetted parts when fluids are changed.
- Wetted parts of Pyrex, stainless steel, and non-deteriorating seals will not corrode in presence of water, mercury, TBE, hydrocarbons.
- 8 U-Tube models, scale heights ±3" to ±25"
- 13 Single Tube models, scale heights 6" to 100"

Large multitube and photopanel units also available for maximum utility in minimum space.

Write for Dynametrics "Pressure Measuring Instruments" Catalog

DYNAMETRICS CORPORATION

Northwest Industrial Park, Dept. 15, Burlington, Mass.

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PRECISION MERCURIAL MANOMETER

Accuracy . . .
.01 inches Hg.

Float Indicator . . .
no meniscus errors

Temperature Compensation . . .
no corrections

Write today for Publication No. A-95.48-A

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King Instruments

MANOMETERS:

U-TUBE—SINGLE CLEANOUT

Simple, sturdy instruments for measuring vacuum or pressure to 250 psi. Cleanout construction; steel, brass, or stainless steel; 6" thru 50" lengths.

DOUBLE CLEANOUT

U-tube type, but using two straight glass tubes with cleanout head at each end. Tested for 250 psi. Steel, brass, or stainless steel; 6" thru 130" lengths.

WELL TYPE

For all types of mounting. Have demountable well, easy to service. Steel, or stainless steel; 6" thru 130" lengths.

RAISED-WELL TYPE

For measuring both pressure and vacuum, or with 3" scale adjustment for measuring absolute pressure. Scale in inches of mercury or feet of altitude.

PHOTO-MANOMETERS

Backlighted for photographing readings. 2 to 100 tubes, to 170" length.

WRITE for literature on items of interest.

LIQUID LEVEL GAUGES

King-Gages of laboratory precision, graduated in inches, gallons or pounds—for every kind of liquid, in vented or pressurized tanks. Brass or stainless steel; 6" thru 88" lengths.

AIR FLOW SNUBBER

Holds rate of flow of air or gas at .04 cfm for purging instrument air lines.

Is also a pulsation damper for use with pressure gauges and recorders.

AIR SIGHT-FEED BUBBLER

Indicates rate of flow by rise of bubbles thru liquid in glass or plastic cylinder. Needle valve gives precise flow adjustment. Tested for 100 psi.

AIR LINE MOISTURE INDICATOR

Used in small-diameter air or gas lines to indicate presence of moisture by change in color of desiccant. Tested for 100 psi.

PRESSURE TRANSMITTER

Used with pneumatically-operated instruments where a positive seal is required between instrument system and fluid measured.

KING ENGINEERING CORPORATION

P. O. Box 659 Ann Arbor, Mich.

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Varo Mfg Co
Vickers Electric Prods Div
WE-Director Systems
Wickes Engrg & Constr

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Auto-Control Labs
Bailey Meter Co
Barton Instrument
Bishop & Co J
Bristol Co
Commercial Iron Works
Conoflow
Daniel Orifice Fitting
Ellison Draft Gage
Fluidynamics
Foxboro Company
Gar Precision Parts
Granville-Phillips
Grinnell Co
Haveg Industries
Hays Corporation
Meriam Instr Co
Missimers Inc
North American Mfg
Republic Flow Meters
Robinson Orifice
Rockwell Mfg Co
Simplex Valve & Meter
United Aircraft Prods
Taylor Instrument

ORIFICES, Adjustable

Acme Industrial Co
Bailey Meter Co
Bristol Co
GPE Controls
Madden Corp
Natl Instrument Labs
Scott Aviation Corp

PERISCOPES, Industrial and Smoke

Alfa-American Corp
Buhl Optical Co
Diamond Power Specialty
Gaertner Scientific
Gordon Enterprises
Kollsman Instr Corp
Lenox Instrument Co
Lerma Engrg Corp
Photomation Inc
Stocker & Yale
Unertl Optical Co
Vought Camera Company

pH CONTROLLERS, INDICATORS and/or RECORDERS

Advanced Instruments
Analytical Measurements
Appalachian Electronic
Assembly Products Inc
Bailey Meter Co
Barber-Colman
Beckman/Sci & Proc Div
B-I-F Industries
Bristol Co
Cambridge Instrument
Coleman Instruments Inc
Daystrom/Weston
Electric Eye Equip
Fisher Scientific
Foxboro Company
GE Apparatus Sales Div
Gaiden Instruments
Greiner Co Emil
Hagan Chem & Controls
Hays Corporation
Industrial Nucleonics
International Instrument
Leeds & Northrup
Milton Roy Co
M-H Brown Instrs Div
Phoenix Precision Instr
Polarad Electronics Corp
Precision Scientific Co
Process & Instruments
Schuco Scientific
Scientific Industries
Sel-Rex Corp
Special Instruments Lab
Stromberg Carlson Co
Taylor & Co WA
Taylor Instrument
Texas Instruments Inc
Thermo Electric
United Electric Controls
Wallace & Tiernan
Westronics Inc
Wheelco Instruments Div

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Analogue Controls Inc
Automation Devices Inc
Autotron Inc
Berkeley Dynamics
Clark Controller
Cutler-Hammer
Davenport Mfg
Daystrom/Weston
Durant Mfg
Dynapar Corp
Eastern Specialty Co
Eldorado Electronics
Electric Eye Equip
Electronic Controls Inc
Energy Kontrols
Epic Inc
Farmer Electric
GE Apparatus Sales Div
G E Specialty Control
Gaiden Instruments
GPE Controls
Gurley W & L E
Heitz Inc Karl
Hoffman Electronics
Hydel Inc
Machinery Electrification
Mallory & Co P R
Mason Instr Co
McElvaine O T
Meipar Inc
M-H Industrial Controls
National Standard Elx
Phoenix Precision Instr
Photobell Co
Photomation Inc
Pic Automation Ctls
Post Electronics
Presin Co
Redford Corp
Reliance Instr Mfg
Specialties Inc
Spectra Electronics
Standard Instrument
Stromberg Carlson Co
Syracuse Electronics
Taller Cooper Div
Tri-Tronics Co
Trott Electronics
United Shoe Machinery
Uniwave Inc
Veeder-Root Inc
WE-Director Systems
Wilson & Co G C
Werner Electronic Devices

PITOT TUBES

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Aero Research Instr
Aerotec Industries
C-Mar Instrument
Continental Sensing Inc
Dwyer Mfg F W
Defender Instrument
Ellison Draft Gage
Flow Corporation
Foxboro Company
General Regulator
Haledy Electronics
Hill & Co E Vernon
Infrared Industries
Kollsman Instr Corp
Meriam Instr Co
Propulsion Dev Labs
Research Appliance Co
Rosemount Engrg Co
Slocomb Co J T
Sterling Precision
Wallace & Tiernan

PRESSURE CONTROLLERS and TRANSMITTERS, Absolute or Static Pressure

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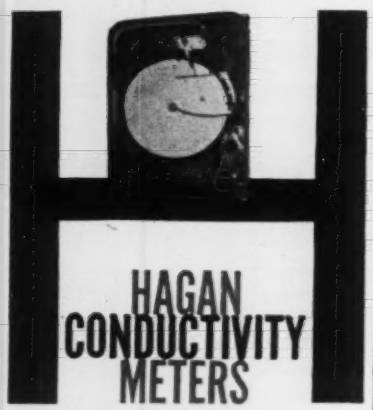
Allen-Bradley
American Meter Co
Amot Controls Corp
Astronics Div
Automatic Control Co
Automatic Timing & Contls
Bailey Co Chas M
Bailey Meter Co
Baldwin-Lima-Hamilton
Barton Instrument
Bayley Instrument
Bendix-Friez Instr
Bendix Montrose Div
Bently Scientific
B-I-F Industries
Black, Sivalls & Bryson
Borg-Warner Controls
Bristol Co
Bulova Research
Burton Mfg Co
Cash Co A W
Cash Valve Mfg
Conoflow
Consol Controls
Cutler-Hammer
Datex Corp
Daystrom/Weston
Daytronic Corp
Denison Engrg Div
Detroit Controls
Dynametrics Corp
Eastern Industries
Edison Industries T A
Fairchild Controls
Fischer & Porter Co
Fisher Governor
Foxboro Company
Fulton Sylphon Div
Furnas Electric
General Controls
G E Gen Purpose Contr Dept
GPE Controls
Greiner Co Emil
Hagan Chem & Controls
Hass Instrument
Hastings-Raydist
Hays Corporation
Healy-Ruff Co
Industrial Engrg Corp
Instrol Inc
International Instrument
Johnson Service Co
Kieley & Mueller
King Engrg
Kollsman Instr Corp
Leeds & Northrup
Leslie Co
Manning Maxwell & Moore
Mason Neilan
Mercoid Corp



The Hagan Model H-O may be used as a single instrument, or up to four different conductivity measurements may be recorded in a single meter case. Provides continuous reliable measurement for a moderate investment.

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For pH control applications, the Hagan system consists of a standard glass electrode and preamplifier, plus a Hagan Model H-O PowrLog receiver for recording and control.

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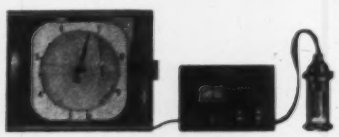

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MARSHALLTOWN, IOWA

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Seegers Mfg
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Servo Systems Co
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Simplex Valve & Meter
Specialties Inc
Square D Co
Stromberg Carlson Co
Swartwout Div
Taylor Instrument
Trans-Sonics
Trerice Co H O
Uehling Instrument
Ultradyne Inc
United Aircraft Prods
United Control Systems
United Electric Controls
Westinghouse Air Brake
WE-Director Systems
Wheelco Instruments Div

PRESSURE GAGES with Alarms

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American Meter Co
Automatic Control Co
Automatic Timing & Contls
Bailey Meter Co
Barton Instrument
Bendrix-Friez Instr
B-I-F Industries
Bristol Co
Computer Instruments
Crosby-Ashton
Edison Industries T A
Electro Devices (Mo.)
Ellison Draft Gage
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Foxboro Company
General Controls
Glassco Instr
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Borg-Warner Controls
Bristol Co
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Consol Electrodynamics
Dynamic Instr
Dynisco Inc
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Taylor Instrument
Trimount Instrument Div
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General Controls
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Hoke Inc
Howell Instruments
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Kerfund Co
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Marsh Instr Co
Mason Neilan
M-H Brown Instrs Div
Marshalltown Mfg
Martin-Decker Corp
Mid-West Instr
Newark Controls
Norwood Controls
Nurnberg Scientific
Panellit Inc
Powers Regulator
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Sanborn Company
Scientific Instrument
Scogers Mfg
Simmonds Precision Prods
Smith Inc Arthur F
Solid State Electronics
Scharr-Tumico
Taylor Instrument
Trerice Co H O
Trimount Instrument Div
Uehling Instrument
Ultradyne Inc
U S Gauge Div
Victor Equipment
Wallace & Tiernan
Weksler Instruments
Wheelco Instruments Div

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Amer Meas & Control
Automatic Control Co
Automatic Timing & Contls
Baldwin-Lima-Hamilton
BJ Electronics
Bristol Co
Computer Instruments
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Daystrom-Weston
Ellison Draft Gage
General Controls Co
Gilmore Industries
Glasco Instr
Detroit Controls
Edison Industries T A
Gulton Industries
Hagan Chem & Controls
Hastings-Raydist
Howell Instruments
Hydel Inc
Kollsman Instr Corp
Lewis Engrg Co
Manning Maxwell & Moore
Model Engrg
Norwood Controls
Panellit Inc
Performance Measurements
Physical Sciences Corp
Rahm Instruments Div
Republic Flow Meters
Servonic Instruments
Smith Inc Arthur F
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Therme Electric
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Wheelco Instruments Div

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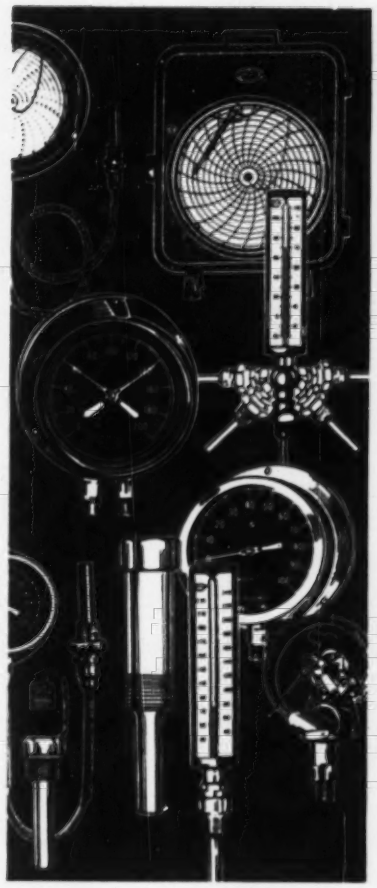

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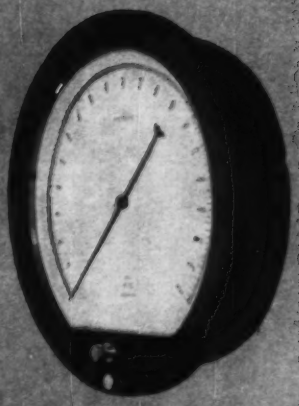

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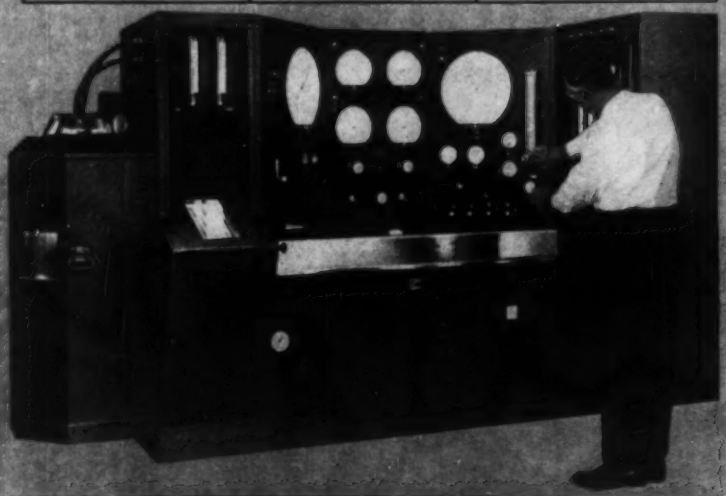

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	0-15 to 0-5,000 inclusive	Over 0-5,000 and including 0-20,000	Over 0-20,000 and including 0-30,000	0 to 40,000	0 to 50,000	0 to 75,000	0 to 100,000
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Detroit Controls
Dynamic Instr
Dynisco Inc
Edison Industries T A
Electro-Mechanical Res
Endevco Corp
Fairchild Controls
Foxboro Company
Glasco Instr
GPE Controls
Gulton Industries
Hagan Chem & Controls
Hamilton Standard Div
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Heise Bourdon Tube
High Temperature Instrs
Instrol Inc
International Resistance
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Norwood Controls
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Photocon Research
Physical Sciences Corp
Rahm Instruments Div
Republic Flow Meters
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Sanborn Company
Schaevitz Engineering
Scientific Products
Servonic Instruments
Solid State Electronics
Specialties Inc
Standard Controls Inc
Statham Instruments
Swartwout Div
Taber Instrument
Tapeswitch Corp
Telechrome Mfg Corp
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Valpey Crystal Corp
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Arkwin Industries Inc
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Foster Engineering Div
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Fulton Sylphon Div
General Controls
General Regulator
Gits Bros Mfg
Golden Anderson
Great Lakes Mfg
Grove Valve & Regulator
Hagan Chem & Controls
Hammel-Dahl
Hoke Inc
Hunt Valve Co
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...Sensitivity: 1 part in 500 in *all* ranges.
...Available with 2¾" or 6" dia. dial.

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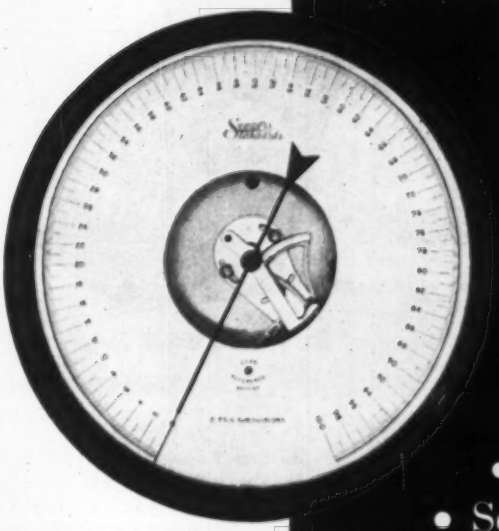

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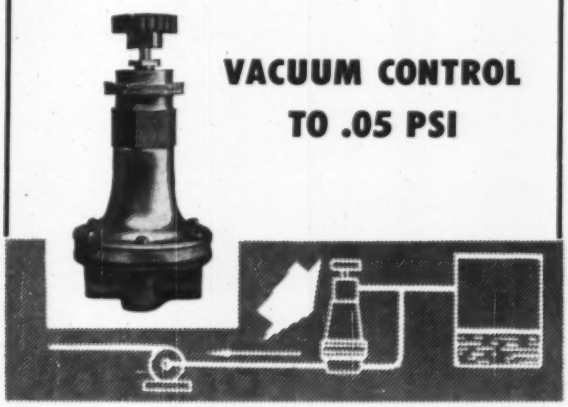

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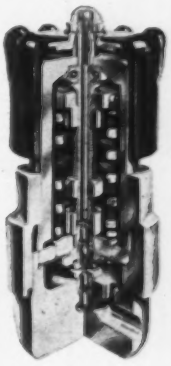

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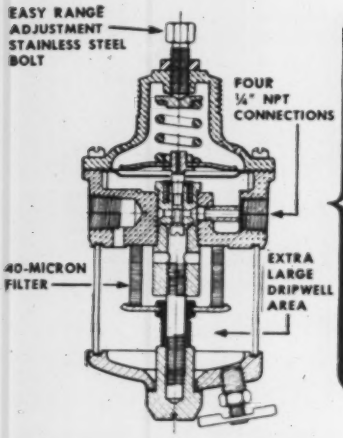

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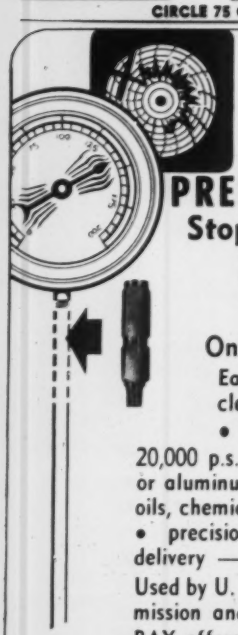

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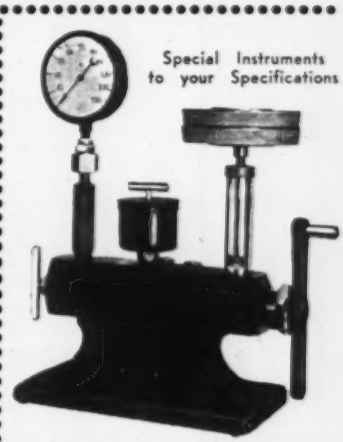

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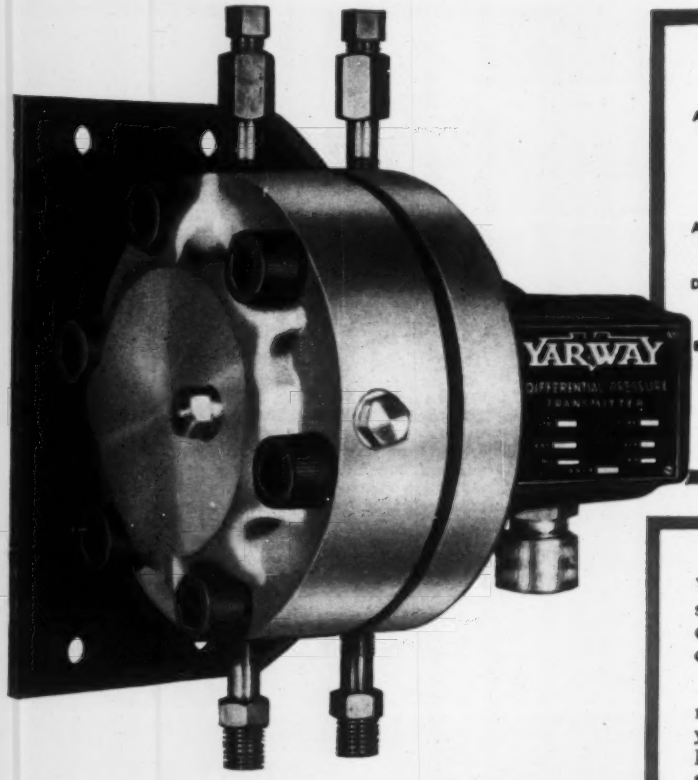

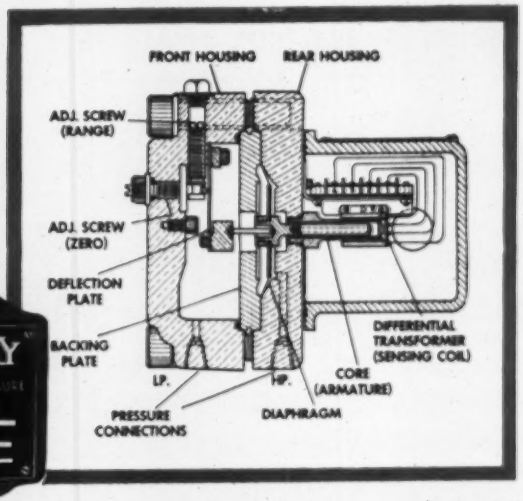

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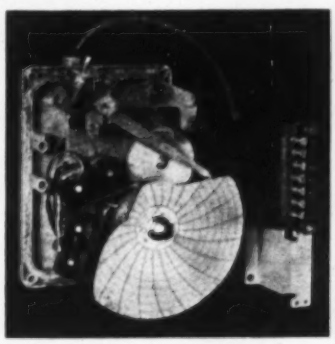

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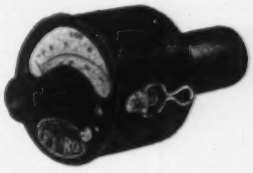

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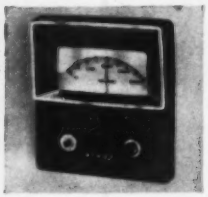

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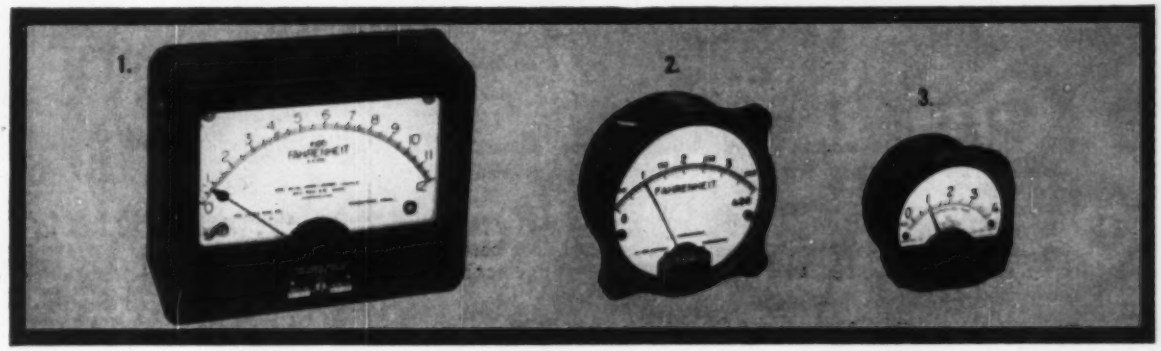
MOLTEN METALS
SURFACES
TRANSMISSIONS

and many others in Automotive and Industrial Applications.

1. **Model 58PY**, Rectangular Bakelite Case
2. **Model 23B**, Four Inch Diameter Bakelite Case
3. **Model 20B**, Three Inch Diameter Shielded Case

For use with I.S.A. Type Y, J, T, K or Chromel-Constantan Thermocouples.*



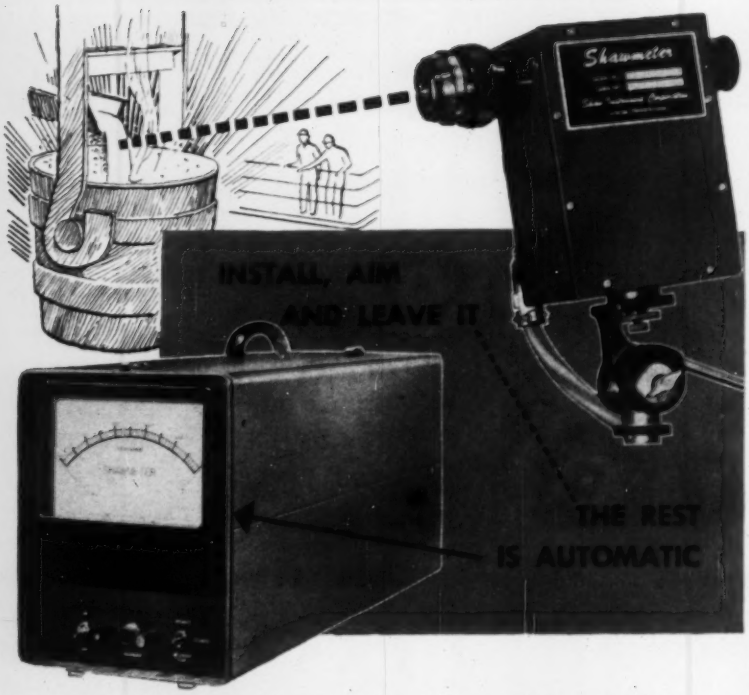
THE LEWIS ENGINEERING CO.
NAUGATUCK, CONNECTICUT

*Hoskins TM.

CIRCLE 85 ON READER-SERVICE CARD

Measure High Temperatures

EASILY, ACCURATELY with the SHAWMETER®



The SHAWMETER is an automatic, direct-reading, two-color pyrometer for indicating, recording or controlling temperatures up to 6500°F.

Measures the temperature of flowing metal, or of moving or stationary objects. No emissivity correction needed. Temperatures may be measured at a considerable distance from the object.

Accurate, sensitive, rugged. Write for complete details.

SHAW INSTRUMENT CORPORATION

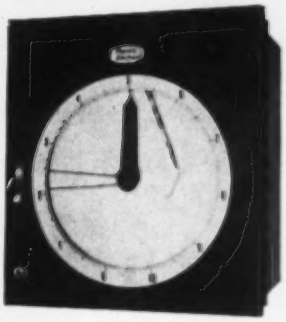
CERAMIC METAL SEALS • NUCLEAR and ELECTRONIC INSTRUMENTATION

P. O. Box L-46 Latrobe, Pennsylvania

CIRCLE 86 ON READER-SERVICE CARD

PYROMETERS

T-E has combined advanced design with quality performance in a wide variety of pyrometric instruments.



Recording Controller

Indicators

Self-balancing, potentiometer, bridge, millivoltmeter.

Controllers

Indicating, signalling recording.

Recorders

Circular chart indicating and controlling.

Other T-E Instruments

"AutoRef"—providing multiple circuit cold-junction compensation
Temperature Monitoring Systems

Write for Instrument Bulletin FF-1

MINIMITE

PORTABLE INDICATOR
Null Balance, Potentiometer Type

This compact unit weighs under 4 lbs.—yet it has a 23½ inch double range scale. It can measure temperatures directly, when connected to a thermocouple, or calibrate other potentiometer or millivoltmeter-type instruments. Available scales cover temperatures from —300°F. to +3200°F. for all standard T/C materials; millivolt ranges from 0 to 62. Accurate to ¼ of 1% of scale range.

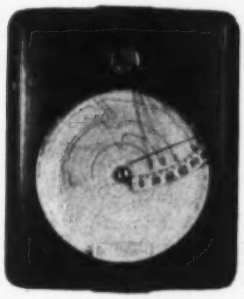
Write for Bulletin 64-FF

ThermoElectric Co. Inc.

Saddle Brook, New Jersey

In Canada—
Thermo Electric (Canada) Ltd., Brampton, Ont.

CIRCLE 87 ON READER-SERVICE CARD



BAILEY

Electronic Pyrometer

• This indicating, recording, and controlling Bailey d-c PYROTRON Receiver Recorder is a self-balancing potentiometer which records one to four continuous temperature records on a 12 in. circular chart. It may be furnished with pneumatic or electric control. A themocouple or a radiation unit is the temperature sensitive element.

Minimum maintenance is assured by the elimination of galvanometers, millivolt meters, batteries and standard cells. A reversible electric motor, under electronic control, balances the potentiometer circuit and drives the indicating, recording, and controlling features.

Bailey PYROTRON Receiver Recorders are made up of interchangeable "plug-in" assemblies, standardized so that only a few spare parts need be carried in stock for many instruments.

Request Product Specifications E12-5 and E12-4.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd. Montreal, Canada

CIRCLE 88 ON READER-SERVICE CARD

Bailey Meter Co
Barber-Colman
Barnes Engineering
Bristol Co
Curtiss Wright
Electronic Control
Epic Inc
GE Apparatus Sales Div
Illinois Testing Labs
Instru Development Labs
Instrument Lab Inc
Leeds & Northrup
Mason Instr Co
M-H Brown Instrs Div
Pyrometer Instr Co
Radiation Electronics
Rayco Instruments Inc
Shaw Instr Corp
Simpson Electric
Spectra Electronics
Technique Associates
Testing Machines Inc
Tipptronic Inc
Warner & Swasey Co
West Instrument
Westronics Inc
Wheelco Instruments Div

PYROMETERS, Thermoelectric, Indicating, Recording and/or Controlling

Assembly Products Inc
Atlantic Pyrometers Inc
Barber-Colman
Barnes Engineering
Bristol Co
Daystrom/Weston
Edison Industries T A
Epic Inc
Federal Pacific
General Controls
GE Apparatus Sales Div
Gordon Co Claud S
Hays Corporation
Howell Instrument Co
Huppert Co K H
Illinois Testing Labs
Leeds & Northrup
Lewis Engrg Co
Manning Maxwell & Moore
McHugh & Son Raymond F
M-H Boston Div
M-H Brown Instrs Div
M-H Industrial Controls
M-H Rubicon Instrs Div
Nurnberg Scientific
Pacific Transducer Corp
Pyro Service Co
Pyrometer Instr Co
Richards Co Arklay S
Rayco Instruments Inc
Ruge Associates
Solitest Inc
Taylor Instrument
Thermo Electric
Thermo Electric Mfg
Tipptronic Inc
West Instrument
Westronics Inc
Winslow Company Inc

RECEIVER INDICATORS, CONTROLLERS, And RECORDERS, Electric Signal

Advanced Instr Corp
Aeronaut & Instr Div
American Optical Co
Applied Science Corp
Atkins Technical Inc
Automatic Control Co
Automatic Timing & Contls
Bailey Meter Co
Barber-Colman
B-I-F Industries
Bristol Co
Bulova Research
Cramer Controls Corp
Daystrom/Weston
Daytronic Corp
Di/An Controls
Dynex Inc
Electric Tachometer
Electro Instruments
Electronic Controls Inc
Engineered Electronics
Epic Inc
Federal Pacific
Fischer & Porter Co
Fuzbers Company
GE Apparatus Sales Div
GPE Controls
Gulton Industries
Hagan Chem & Controls
Hathaway Instruments
Hays Corporation
Healy-Ruff Co
Inflico Inc
Instrol Inc
Kearfott Div
Kelmath Instr Co
Larson Instrument
Leach Corporation
Leeds & Northrup
MacLaren & Co P B
Magnetic Instr Co
Manning Maxwell & Moore
Massa Div
M-H Brown Instrs Div
Moore Products Co
Motorola Military Elx
North Electric Co
Norwood Controls
Oil Well Water Locating

BAILEY

RECEIVER RECORDER

• A Recorder and/or Controller for pneumatic and electric transmission systems or for direct operating pressure units. Provides one to four continuous chart records on a single 12 in. circular chart.

"Plug-in", precalibrated units provide flexibility and permit easy field adaptation to revise application requirements. Clean, fresh, brilliant ink is fed to recording pens from sealed sacs which contain a normal one-year's supply.

The "plug-in" components available are:
Pneumatic Receiver
Integrator
A-C Electronic Receivers
D-C Electronic Receivers
Pilotrol
Pneumatic Transmitter
Electric Transmitter
Program Controller
Running Time Recorder
Direct Operating Pressure Recorders

Request Product Specification E12-5.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd. Montreal, Canada

CIRCLE 91 ON READER-SERVICE CARD

Pyrometers, Automatic Controllers, Indicators, Recorders

The Bristol line of Pyrometers includes electronic potentiometer, millivoltmeter, thermocouple, and radiation types in indicating, single-pen, two pen, and multiple record (up to 24) models.

Strip-and round-chart recorders and automatic controllers are available with any of the following types of control: electric, electronic, or air-operated with all types of control actions and as program controllers.

Bristol Dynamaster ®
Electronic Potentiometer

Write for Bulletins P1245A, P1242, P1244, P1248, and P1238.

BRISTOL COMPANY

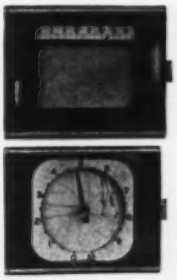
112 Bristol Rd., Waterbury 20, Conn.

CIRCLE 89 ON READER-SERVICE CARD

Potentiometers, Electronic, Round and Strip Chart

Bristol Electronic Dynamaster (R) Potentiometers will measure, record, or automatically control any variable that can be translated into an electrical quantity (d-c current, d-c voltage, capacitance, or resistance).

Offered in indicating, recording (up to 24 records on same chart), and controlling. All types of control: air operated, electric, electronic program control.



Write for Bulletin P1245A

BRISTOL COMPANY

112 Bristol Rd., Waterbury 20, Conn.

CIRCLE 90 ON READER-SERVICE CARD

HAGAN ELECTRONIC RECEIVERS

For remote recording and/or control of temperatures, or the telemetering of flows, levels and pressures, the Hagan PowrLog instruments offer:

• Thermocouple or Resistance Bulb temperature measurements.
• Unique amplifier used for *all* types of measurements.
• Plug-in input boxes for each application.
• Fast and accurate, up to four variables may be recorded on one chart.

HAGAN CHEMICALS & CONTROLS, INC.
DIVISIONS: CALGON COMPANY, HALL LABORATORIES

HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Flumendosa No. 13, Milano, Italy

CIRCLE 92 ON READER-SERVICE CARD

Fielden Markets Advanced Tektor Level Controllers...

and a completely new approach to Temperature Indication, Record and Control

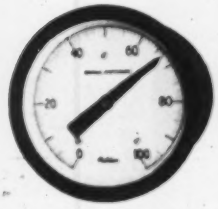
The Advanced TEKTOR Level Controller

- New high stability circuit reduces long term drift to negligible proportions.
- New Probe design employing specially developed molding technique eliminates all thermal drift in probe to give full advantage of the new stable instrument.
- Cable lengths to 150' permit remote level control installations.
- Single knob calibration control—simplifies setting-up procedure.
- Printed Circuit design practically eliminates maintenance.
- Interchangeable chassis—snaps right out of the case. Simply snap a new unit into place.
- Independent N.C. and N.O. control circuits, 5 AMP, 250 Volts, AC.
- Accessible terminal block for easy installation.

The New BIKINI Temperature Instruments

The BIKINI Precision Electronic Temperature Controller

- Inexpensive—Advanced design and modern production methods resulting in low cost and exceptional value.
- High Stability—Control point unaffected by variations in ambient temperature or supply voltage. Extremely high long term stability.
- Transistorized—Transistors used throughout, resulting in long trouble-free service. No "warming-up" time.
- Modern Presentation—Small "meter-type" case occupying a minimum of panel space. Circular face clearly marked and attractive in appearance.
- Distance Indication—Specially developed circuit allows up to 300 ft. cable between instrument and point where temperature is being measured.
- Accurately calibrated dial—Dial accurately calibrated in actual temperature. Long scale length (approx. 9") for ease of setting.
- No Moving Parts—No galvanometer, delicate suspensions or pivots.
- No Maintenance—Completely sealed unit requiring no electrical, electronic or mechanical maintenance.
- Triggered Relay Action—Arcing of heavy current-carrying contacts reduced to a minimum and relay "chatter" completely eliminated.
- Electric or Pneumatic Control—With the electro-pneumatic relay, the standard instrument can be fitted into pneumatic control systems.
- No compensating Cable—Sensing element is a resistance bulb which can be connected with simple copper wire.
- No Cold Junction Compensation—A resistance thermometer needs no cold junction compensation and this complication is eliminated.



The BIKINI Electronic Temperature Indicator

The BIKINI Transistorized Recorder/Controller

- Electronic Precision—Servo-operated, self-balancing indicator with reproducibility better than 0.25% of range. No standardization required.
- Transistorized—Printed circuit and fully transistorized for greater reliability.
- Expanded Scale—Suppressed zero ranges down to spans of 50°C to give highest accuracy around working temperature.
- Long Lead Length—Calibration and accuracy completely independent of distance between instrument and measuring point up to 100 yards.
- Rapid Response—Indicator capable of full scale travel in less than one second. Resistance bulbs with time constants down to 2 seconds.
- A.C. Pickup—Measuring circuit operates at 1,000 cps.—unaffected by line frequency pick-up.
- Simple Installation—Inexpensive electric wiring makes installation simple to plan. No capillary tubes or compensating cable.
- Control Contact—Can be fitted with electrical contact which can be used for alarm or control.
- No Maintenance—Completely sealed panel mounting unit requiring no electronic or mechanical maintenance.

Fielden FIELDEN ELECTRONICS, Inc., Huntington, L.I., New York
FIELDEN CANADA, Ltd., 233 Notre Dame W., Montreal

CIRCLE 93 ON READER-SERVICE CARD

Poole Instrs Inc
Precision Mechanisms Corp
Princeton Div
Republic Flow Meters
Revere Corp of Amer
Riehle Testing
Ruge Associates
Sanborn Company
Scientific Instrument
Sensitive Research Instr
Shand and Jurs
Sonex Inc
Sperling Equipment Div
Swartwout Div
Taylor Instrument
Telectro Industries
Theta Instrument
Times Facsimile
Warner & Swasey Co
WE Instr & Controls Sys
West Instrument
Westronics Inc
Wheelco Instruments Div
Yarnall Waring

RECEIVER INDICATORS, CONTROLLERS, and RECORDERS, Pneumatic Signal

American Meter Co
Applied Science Corp
Automatic Timing & Contls
Bailey Meter Co
Barton Instrument
B-I-F Industries
Bristol Co
Brush Instruments Div
Crosby-Ashton
Daystrom/Weston
Dickson Co
Ellison Draft Gage
Fischer & Porter Co
Fisher Governor Co
Foxboro Company
GE Apparatus Sales Div
Hagan Chem & Contrls
Hays Corporation
Infilco Inc
Johnson Service Co
Keinath Instr Co
Kieley & Mueller
Manning Maxwell & Moore
Mason Neilan
M-H Brown Instrs Div
Moore Products Co
OPW Jordan
Powers Regulator
Republic Flow Meters
Scientific Instrument
Taylor Instrument
Telectro Industries
U S Gauge Div
Wheelco Instruments Div

REFRIGERATION CONTROLLERS

Atkins Technical Inc
Automatic Timing & Contls
Bristol Co
Controls Co of Amer
Custom Comp Switches
Daystrom/Weston
Eastern Industries
Forma Scientific
General Controls
GE Apparatus Sales Div
GE Gen Purpose Ctl Dept
Hagan Chem & Contrls
Manning Maxwell & Moore
M-H Brown Instrs Div
Partlow Corp
Scientific Instrument
United Electric Controls

SCANNERS

Advanced Instr Corp
Airborne Instr Lab
Alden Electronic
Anadex Instruments Inc
Appalachian Electronic
Applied Science Corp
Assembly Products Inc
Baldwin-Lima Hamilton
Borg-Warner Controls
Budd Co Inst Div
Bytrex Corporation
Cramer Controls Corp
Cubic Corp
Cunningham Son & Co
Cutler-Hammer
Datex Corp
Designers for Industry
Electric Eye Equip
Electro Instruments
Electro-Logic Corp
Electronic Controls Inc
Engis Equipment
Erie Pacific
Foxboro Company
GPE Controls
GE Specialty Control
Geotechnical Corp
Gilmore Industries
Gordon Enterprises
Hydel Inc
Illinois Testing Labs
Image Instruments
Instrument Lab Inc
Leeds & Northrup
Lynch Communication
Maxson Corp W L
Mercoid Corp
Non-Linear Systems
Norden Division
Panellit
Parsham Inc
Philco Corp
Phillips & Co H A
Photobell Co
Powers Regulator
Radiation Electronics
San Diego Scientific
Scanivalve Co
Tally Register Corp
Telechrome Mfg Corp
Thermo Electric
Times Facsimile
United Aircraft Prods
US Gauge Div
Victor Adding Machine
Vidar Corp

SERVO SYSTEM ANALYZERS

Automatic Timing & Contls
Boonshaft and Fuchs
Brush Instruments Div
Chadwick-Helmuth
Control Electronics
Dian Laboratories
Electro Instruments
Hydel Inc
Industrial Control Co
Industrial Measurements
Kearfott Div
Land-Air Inc
Ling Electronics
Link Div
Moseley Co F L
Muirhead Instrs Inc
North Atlantic Indus
Pearce-Simpson Inc
Physical Sciences Corp
Polarad Electronics Corp
Theta Instrument

SERVO VALVES, Hydraulic and Electrohydraulic

Acme Industrial Co
Aero Supply Mfg
Aerotec Industries
Amer Meas & Control
Associated Valve Co
Atwood & Morrill Co
Automatic Timing & Contls
Bendix Utica Div
Cash Valve Mfg
CompuDyne Corp
Consol Controls
Eastern Industries
General Controls
GPE Controls
Greer Hydraulics Inc
Hamilton Standard Div
Hydra-Power Corp
Hydraulic Controls Co
Kearfott Div
Leonard Inc Wallace O
Manning Maxwell & Moore
Midwestern Instrs
M-H Aeronautical Div
M-H Industrial Controls
Model Engrg
Moog Servocontrols
North American Mfg
O K Machine & Tool
Oilgear Co
Parker Aircraft Co
Pegasus Labs
Pesco Products Div
Standard Controls Inc
Sterling Precision
Syracuse Electronics
True-Flo Valve
United Aircraft Prods
United Control Systems
Vickers-A & E Center
Weston Hydraulics Ltd

SERVOMECHANISMS, Including Servo Systems, Kits (see also Servomotors, also Clutches, and Gears-Cat. 8)

Advanced Research
Airborne Accessories
Airpax Electronics
American Electronics Inc
Amer Meas & Control
American Meter Co
Analogue Controls Inc
Andersen Labs
Arma Division
Astromics Div
Atlas Precision Prods
Automatic Timing & Contls
Beckman/Helipot Div
Belock Instrument
Bendix Montrose Div
Bowmar Instrument
Brach Mfg Corp
Bulova Research
Carmody Corp
Concord Control Inc
Control Technology
Dijeo
Dalmotor Div
Datex Corp
Datran Electronics
Daystrom/Mtl Elx
Dole Valve Co
Dynametrics Corp
Dynamic Gear Co
Dynatronics Inc
Dynex Inc
Eastern Industries
EBEX
Edison Industries T A
Electric Eye Equip
Electric Tachometer
Electro-Autosizing
Electro Precision
Electrodynamic Instr
Electronic Controls Inc
Feedback Controls Inc
Gap Instrument
General Controls
GE Apparatus Sales Div
General Mills Inc
Giannini Controls Corp
Globe Industries
GPE Controls
Hamilton Standard Div
Hoover Electric Co
Humphrey Inc
Hydel Inc
Industrial Control Co
Inseo Company
Instru-Lec Corp
Jordan Controls
Kavamil Co
Kearfott Div
Kinetic Instr Corp
Kollsman Instr Corp
Land-Air Inc
Librascope Div
Ling Electronics
Link Div
Maclaren & Co F B
Mast Development
Maxson Corp W L
Micro Gee Products
Midwestern Instrs
Milro Controls
M-H Industrial Controls
Moog Servocontrols
Muirhead Instrs Inc
Natel Engrg Co
Niagara Frontier Div
Norden Division
Norwood Controls
Nuclear Materials & Equip
Oilgear Co
Oster Mfg John
Ovitron Corp
Pegasus Labs
Philco Corp
Physical Sciences Corp
Precision Mechanisms Corp
Reeves Instr Corp
Richardson Scale Co
Rockwell Engineering
Schavitz Engineering
Servo-Dynamics Corp
Servo Systems Co
Specialties Inc
Spectral Electronics
Sterling Precision
Strand Engrg Co
Stromberg Carlson Co
Tapco Group
Telechrome Mfg Corp
Telectro Industries
Ultronix Inc
United Control Systems
United Shoe Machinery
U S Gear Corp
Utechnics Inc
Vemaline Products
Vickers-A & E Center
Vol-Shaw Electronics
Westamp Inc
Weston Hydraulics Ltd
Western Design
Westronics Inc

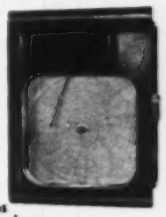
SERVOMECHANISMS, Digital, including Digital Positioners

Abacus Inc
Airflyte Electronics
Airpax Electronics
American Meter Co
Andersen Labs
Auerbach Electronics
Bowmar Instrument
Coleman Engrg
Concord Control Inc
Consol Controls
Control Electronics
Control Equipment Corp
Control Technology
Cox Instruments
Dijeo
Datex Corp
Datran Electronics
Daystrom/Control Sys
Daystrom/Mtl Elx
Dynametrics Corp
Dynatronics Inc
Dynex Inc
Electric Eye Equip
Electro-Autosizing
Electrodynamic Instr
Electronic Controls Inc
Electronic System Dev
Engis Equipment
Ford Instr
Gemeo Electric Co
General Controls
GE Specialty Control
Genesys Corp
Gerber Scientific Inst
Giannini Controls Corp
Gilmore Industries
Gyrex Corp
Hamilton Standard Div
Hydel Inc
Induction Motors of Calif
Industrial Control Co
Jordan Controls
Kearfott Div
Kellogg Switchboard
Kinetic Instr Corp
Kollsman Instr Corp
Land-Air Inc
Librascope Div
Maclaren & Co F B
Mast Development
Maxson Corp W L
Moseley Co F L
Niagara Frontier Div
Nuclear Materials & Equip
Pegasus Labs
Performance Measurements
Philco Corp
Physical Sciences Corp
Revere Corp of Amer
Richardson Scale Co

Bristol Metameter® Telemeters

for remote measurement, indicating, recording and automatic control

Bristol's Metameter Telemeters measure pressure, flow, temperature, liquid level, motion and gate position, voltage, current, power, totalized power load, and reactive volt-amperes at remote points from a few feet to many miles away. Very wide choice of transmitting media: carrier channel, telephone, private wires, radio beam (microwave, VHF, and UHF), multiplexing and selective calling—or any convenient circuit you may select. Many electric and electronic instruments (round- and strip-chart) available. Write for Bulletin M1710.



Series 500 Receiver

BRISTOL COMPANY

112 Bristol Rd., Waterbury 20, Conn.

CIRCLE 94 ON READER-SERVICE CARD

SMOKE INDICATORS AND RECORDERS

BAILEY METERS

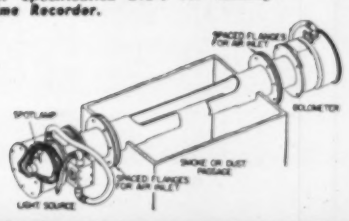
BAILEY SMOKE DENSITY RECORDER (Bolometer Type)

May also be used to indicate Dust Density or Particle Concentration. The Bailey Smoke Density Recorder quickly reveals inefficient operating conditions and provides 24-hour continuous records. A Bailey Running Time Recorder may be included in the same case to record elapsed time of excessive smoke condition.

Both light source and Bolometer are of sealed beam construction to assure long, accurate life. This unique smoke detector is not affected by high ambient temperatures or corrosive gases. It needs no cooling devices.

Request Product Specification E66-1 for Smoke Density Recorder and Product Specification E12-5 for Running Time Recorder.

Smoke Density Recorder



BAILEY METER COMPANY

1041 IVANHOE ROAD · CLEVELAND 10, OHIO

CIRCLE 95 ON READER-SERVICE CARD

Rotary Devices Corp
Servo-Dynamics Corp
Spectrol Electronics
Sterling Precision
Stromberg Carlson Co
Syracuse Electronics
Taller Cooper Div
Tally Register Corp
Tapco Group
Technitrol Engrg
Telechrome Mfg Corp
Teller Co
Trak Electronics
United Control Systems
United Shoe Machinery
Varo Mfg Co
Warner & Swasey Co

SERVOMOTORS, Electric Motor and/or Solenoid

Airborne Accessories
Airesearch Mfg Co
American Electronics
Beckman Helipot Div
Bekey Electric Div
Diehl Mfg Co
Dynex Inc
Electric Indicator
Ford Instr
Giannini Controls Corp
Greenleaf Mfg Div
Hoover Electric Co
Kearfott Div
Kinetic Instr Corp
Land-Air Inc
Librascope Div
Link Div
M-H Industrial Controls
Muirhead Instrs
Norden Division
Sangamo Electric Co
Summers Gyroscope
Superior Electric Co
Weston Hydraulics Ltd
Wright Machinery Co

SERVOMOTORS, Hydraulic, Mechanical and Pneumatic

Acme Industrial Co
American Electronics Inc
Amer Meas & Control
Barber-Colman
Eastern Air Devices
Eastern Industries
GPE Controls
Hydra-Power Corp
Hydraulic Controls Co
Induction Motors of Calif
Kearfott Div
Mason Neilan
Midwestern Instrs
M-H Aeronautical Div
M-H Industrial Controls
Modernair Corp
Muirhead Instrs Inc
Oilgear Co
Oster Mfg John
Pegasus Labs
Racine Hydra & Machy
Tapco Group
Vickers-A & E Center
Weston Hydraulics Ltd
Westinghouse Air Brake

SIGHT FLOW BUBBLERS

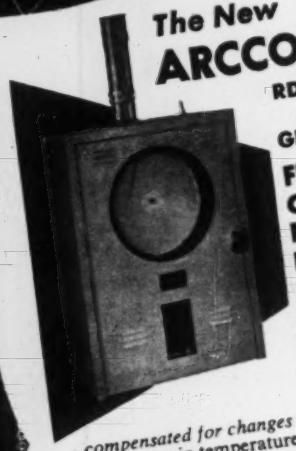
Acme Industrial Co
King Engrg
Petrometer Corp
Trimount Instrument Div

SMOKE DENSITY INDICATORS and/or RECORDERS

Automatic Timing & Contls
Autotron Inc
Bacharach Indus Instr
Bailey Meter Co
Bristol Co
Diamond Power Specialty
General Controls Co
GE Apparatus Sales Div

ARCCO

The New
ARCCO-ANUBIS
RD-B (Dry-Air)
GAS
GRAVITOMETER



FULLY COMPENSATES FOR BAROMETRIC PRESSURE CHANGES

With the new ARCCO-Anubis RD-B Gas Gravitometer you get a highly accurate record of the specific gravity of gases... *fully compensated for changes in barometric pressure* as well as changes in temperature and humidity. It employs two columns; one for gas, one for "dry air." The difference in weight between the "dry air" and the gas in these two columns is measured and recorded in terms of specific gravity. A floating lever attached to the unit of a 6" aneroid barometer assures that the recorded gravity will always be corrected for barometric pressure changes.

ARCCO-ANUBIS GAS GRAVITOMETERS

★ For Recording
★ For Transmitting
★ For Controlling

Write for Bulletin 101-R4 for complete information

ARCCO INSTRUMENT COMPANY, INC.
7144 EAST CONDOR STREET · LOS ANGELES 22, CALIF.
MANUFACTURERS OF PRECISION INSTRUMENTS

Send for Bulletin No. 101-R4

CIRCLE 96 ON READER-SERVICE CARD

GE Specialty Control
Hagan Chem & Controls
Hays Corporation
Hoffman Electronics
Instr Development Labs
Leeds & Northrup
Monitron Co
Phoenix Precision Instr
Photobell Co
Photomation Inc
Presin Co
Reliance Instr Mfg
Research Appliance Co
Westronics Inc
Wheelco Instruments Div
Worner Electronic Devices

SPECIFIC GRAVITY CONTROLLERS, INDICATING AND RECORDERS

Accuracy Scientific
Alfa-American Corp
American Meter Co
ARCCO Instr Co
Automatic Timing & Contls
Automation Products
Barton Instrument
Bristol Co
Brooks Instrument
Buffalo Meter Co
Dwyer Mfg F W
Federal Pacific
Fischer & Porter Co
Fisher Governor Co
Foxboro Company
Hagan Chem & Contrls
Hallikainen Instrs
Impact-O-Graph Corp
Industrial Nucleonics
Instruments Inc
Kieley & Mueller
King Engrg
M-H Brown Instrs Div
Moore Products Co
Norwood Controls
Nuclear Corp of Amer
Nuclear Materials & Equip
Ohmart Corp
Permutit Co
Petrometer Corp
Poole Instrs Inc
Potter Aeronautical
Precision Thermometer
Radionics Inc
Ranarex Div
Schutte and Koerting
Stromberg Carlson Co
Tracerlab Inc
Wallace & Tiernan
Westronics Inc

SPEED INDICATORS, RECORDERS, and REGULATORS, including Speed Switches

Actuator Prods Corp
Airpax Electronics
Allen-Bradley
American Meter Co
Annin Company
Annis Co R B
Automatic Control Co
Automatic Timing & Contls
Bailey Meter Co
Barber-Colman
Biddle Co James G
Bin-Dicator Co
Boulin Instrument
Bowmar Instrument
Bristol Co
Consolidated Diesel
Control Technology
Cox Instruments
Custom Comp Switches
Daystrom/Weston
Detroit Controls
Electric Regulator
Electric Tachometer
Electro-Mechanic Co
Electro Products Labs
Engler Instr
Epic Inc
Esterline-Angus
Federal Pacific
Foxboro Company
GE Apparatus Sales Div
GE Specialty Control
General Radio
Hanson-Gorrill-Brian
Hays Corporation
Hewlett-Packard
Kahn & Co
Kearfott Div
Leeds & Northrup
Liquidometer
Machinery Electrification
Maclaren & Co F B
Marx Co Clarence J
Metron Instrument
Micrometrical Mfg
M-H Brown Instrs Div
North Atlantic Indus
Norwood Controls
Performance Measurements
Photobell Co
Potter Aeronautical
Scherr-Tumico
Servonic Instruments
Servo-Tek Products
Synchro-Start
Specialties Inc
Standard Instrument
Stiefel Co Herman
Sterling Precision
Stratos Div
Stromberg Carlson Co
Syracuse Electronics
Tapco Group
Taylor Instrument
Thermo Electric
Universal Match
Unimare Inc
Varo Mfg Co
Vectrol Engrg
Vickers Electric Prods Div
WE-Instr & Control Sys
Westberg Mfg Co
Westinghouse Electric
Westronics Inc
Wheelco Instruments Div
Zernickow Co O

Strain Gage Readings

The only journal devoted to resistance strain gages, strain gage based transducers, and associated instrumentation, with international literature review section.

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Consultants in instrumentation for stress analysis.
"Success Through Engineered InstrumentatioN"
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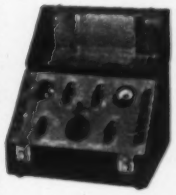
Strain Gage Instrumentation

BAM-1
Bridge Amplifier and Meter

Very convenient general purpose box. Static readings on meter. Dynamic readings on dc 'scope. Transistor dc amplifier with excellent low noise and drift. **Bulletin #6.**

BA-12
Bridge Amplifier



Accurate monitoring of fatigue tests. "Dynamic Null Balance" gives accuracy within 1% on steady dynamic signals. Used with any cathode-ray oscilloscope. **Bulletin #5.**

B-1 Bridge

Bridge box for powering and calibrating all configurations of SR-4 type strain gages drives 10 millivolt sensitivity recorders such as strip chart, dial indicators and sensitive cathode-ray oscilloscopes. The B-1 supplies DC to the strain gage bridge. It is powered from 115V 60 cycle line and gives stable and dependable operation from DC to 50,000 cps. **Bulletin #13.**

BSG-6 Switch and Balance, Bulletin #14.

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Dalmotor Div
Dynex Inc
Eastern Air Devices
FAE Instrument
Feedback Controls Inc
GE Apparatus Sales Div
Hoover Electric Co
Insco Company
Instru-Lec Corp
Jan Hardware Mfg
Jones Motrols
Kearfott Div
Kinetic Instr Corp
Link Div
Lovejoy Flex Coupling
Metron Instrument
New England Gear Works
Perfecting Service Co
Pic Design Corp
Planet Instrument
Precision Mechanisms Corp
Reeves Pulley Co
Sterling Precision
Stratos Div
Ultronix Inc
US Electrical Motors
Uniwave Inc
Varo Mfg Co
Zero Max Co

SPEED SYNCHRONIZING INDICATORS
Airpax Electronics
Biddle Co James G
Bowmar Instrument
Electric Tachometer
PIC Design Corp
Sterling Precision
Stratos Div
United Control Systems
US Electrical Motors
Uniwave Inc
Varo Mfg Co

STRAIGHTENING VANES
Bailey Meter Co
Bristol Co
Daniel Orifice Fitting
Foxboro Company
Potter Aeronautical
Robinson Orifice
Sparling Equipment Div

STRAIN GAGES, Including Bonded and Unbonded Resistance Type
Automatic Timing & Contls
B and F Instruments
Baldwin-Lima-Hamilton
Budd Co Inst Div
Bytrex Corp
Century Elx & Insts
Columbia Research Labs
Consol Electrodynamics
Daytronic Corp
Dillon & Co W C
Dynamic Instr
Foxboro Company
GE Apparatus Sales Div
Gulton Industries
High Temperature Insts
Korfund Co
Mefco Sales & Service
Metzger & Son F F
Micro-Test Inc
Physical Sciences Corp
Revere Corp of Amer
Statham Instruments
Stavid Div
Tinius Olsen Testing

STRAIN-RATE and stress-RATE CONTROLLERS
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Budd Co Inst Div
Bytrex Corp
GE Apparatus Sales Div
Gilmore Industries
Research Inc
Tinius Olsen Testing
United Control Systems
Westronics Inc

STRAIN-TIME RECORDERS
American Optical Co
Automatic Timing & Contls
Baldwin-Lima-Hamilton
B & F Instruments
Brush Instruments Div
Budd Co Inst Div
Datex Corp
Daytronic Corp
Electro Instruments
Electro-Logic Corp
Ellis Associates
Geotechnical Corp
Gilmore Industries
Keinath Instr Co
Sanborn Company
Tinius Olsen Testing
Westronics Inc

STRESS-STRAIN ANALYZERS, INDICATORS and/or CONTROLLERS
Anadex Instruments Inc
Automatic Timing & Contls
Baldwin-Lima-Hamilton
B & F Instruments
Boone Instrument
Brush Instruments Div
Budd Co Inst Div
Bytrex Corp
Century Elx & Insts
Consol Electrodynamics
Consolidated Systems
Datran Electronics
Daytronic Corp
Dieterl Co
Ellis Associates
Gilmore Industries
Hewlett-Packard
Korfund Co
Magnaflux Corp
O K Machine & Tool
Owen Labs
Performance Measurements
Photron Instr Co
Physical Sciences Corp
Polyphase Instr Co
Telechrome Mfg Corp
Tinius Olsen Testing
Ultronix Inc
United Control Systems
Westronics Inc

STROBOSCOPES
Berkshire Laboratories
Boulin Instrument
Chadwick-Helmuth
Ejnic Inc
Communication Meas Lab
Davenport Mfg
Engis Equipment
General Radio
Geotechnical Corp
Hickok Electrical Instr
Kemlite Labs
Kerneo Instruments Co
Kingston Industries In
Sticht Co Herman

TACHOGRAPHS
Automatic Timing & Contls
Biddle Co James G
Electric Tachometer
Engler Instr
Sanborn Company
Sangamo Electric Co
Sticht Co Herman
Zernickow Co O

TACHOMETERS, CENTRIFUGAL
Actuator Prods Corp
Amther Testing
Associated Research
Automatic Timing & Contls
Biddle Co James G
Boulin Instrument
Durant Mfg
Electric Autolite
Epic Inc

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Universal Type UO with 5 ranges in one instrument. With overspeed protection.

CAT. NO. 303, 30-12,000 RPM
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CAT. NO. 322, 60-24,000 RPM
CAT. NO. 346, 120-48,000 RPM

Many other models with one, three or five ranges. BULLETIN 750

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CAT. NO. 2301, 0-10,000 RPM
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Suitable double rated speed. BULLETIN 735

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- Brilliant white light of 6500° Kelvin color temperature.
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- Used with electrolytic or oil type capacitors.
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A Quarter Century of Electronic Research and Manufacture

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"Industry's Seeing Eye"

MODEL 510-AL
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With brilliant blue-white flasher unit . . . extra long, easy-to-read scales, excellent stability, longer focusing beam.

Bulletin 780

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MODELS WITH ONE, TWO, THREE OR FIVE RANGES FOR ALL SPEEDS 0-100,000 RPM
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FRAHM® RESONANT REED TACHOMETERS

JAGABI® TACHOMETERS

JAGABI® TACHOSCOPES

JAGABI® SPEED INDICATORS

JONES TACHOMETERS

METRON TACHOMETERS

DR. HORN TACHOMETERS

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JAMES G. BIDDLE CO.
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CIRCLE 103 ON READER-SERVICE CARD

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For Precise and Rapid Measurements of

- **Magnetic Design** Steady readings accurate to ±0.5% at any part of any scale.
- **Instantaneous Reading** No timing or waiting.
- **Self-Powered** Needs no battery. Always ready for immediate use at full accuracy.
- **Nine Ranges** To 50,000 rpm on highest. Interpolate tenths of rpm on lowest.
- **Overspeed Protection** Inherent and built-in.
- **Hold Button "memorizes"** reading when desired.

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Complete Service Facilities — Send for Details and Literature

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Jones Motorola
Kerneo Instruments Co
Scherr-Tumico
Sticht Co Herman
Zernickow Co O

TACHOMETERS, Chronometric
Amthor Testing
Associated Research
Automatic Timing & Contls
Biddle Co James G
Boulin Instrument
Electric Tachometer
Giannini Controls Corp
Hasler Tel
Kerneo Instruments Co
Marx Co Clarence J
Martindale Electric
Presin Co
Standard Electric Time
Sticht Co Herman
Waltham Precision Instr
Zernickow Co O

TACHOMETERS, Electric, Electronic, and Electromagnetic
A R & T Electronics Inc
Airborne Instr Lab
Airpax Electronics
Anadex Instruments Inc
Assembly Products Inc
Automatic Timing & Contls
Avionic Supply
Beckman/Berkeley Div
Biddle Co James G
Bill Jack Scientific
Boulin Instrument
Bristol Co
Computer Measurements
Dalmotor Div
DaystromWeston
D & R Ltd
Designers for Industry
Detroit Controls
Diehl Mfg Co
Dymec Inc
Dynamics Research
Dynapar Corp
Eastern Air Devices
Electric Tachometer
Electro-Mechano Co
Electro Products Labs
Electronic Dev Corp
Epic Inc
Esterline Angus
Foxboro Company
GE Apparatus Sales Div
General Radio
Giannini Controls Corp
Gilmore Industries
Gurley W & L E
Hansen Co Wm
Haydon Co A W
Hewlett-Packard
Hoover Electric Co
Howell Instruments
Ideal Industries
Kahn & Co
Kearfott Div
Kollsman Instr Corp
Machinery Electrification
Marx Co Clarence J
Metron Instrument
M-H Brown Instrs Div
Muirhead Instrs Inc
Nacimco Products
Natel Engrg Co
Norden Division
Norwood Controls
Pace Engrg Co
Performance Measurements
Potter Aeronautical
Raydyne Corp
Servo Systems Co
Servo-Tek Products
Simpson Electric
Stewart-Warner Corp
Sticht Co Herman
Southwestern Indus Elx
Sunshine Scientific
Tapco Group
Transistor Specialties
Uniwave Inc
Varo Mfg Co
Vidar Corp
WacLine Inc
Waugh Engrg Co
WE-Instr & Control Sys
Westberg Mfg Co
Westinghouse Electric
Yokogawa Electric Works

TACHOMETERS, Miscellaneous, including Cross Pendulum, Fly-ball, Ignition actuated, Tilting-ring (see also Frequency -Cat. 3)
Actuator Prods Corp
Associated Research
Automatic Timing & Contls
Biddle Co James G
Cox Instruments
Electro-Mechano Co
Fox Valley Instr
Giannini Controls Corp
Marx Co Clarence J
Performance Measurements
Ram Meter Inc
Sticht Co Herman
Westberg Mfg Co
Zernickow Co O

TACHOMETERS, Recording
Amthor Testing
Automatic Timing & Contls
Bailey Meter Co
Barber-Colman
Biddle Co James G
Bristol Co
Daystrom/Weston
Durant Mfg
Electric Tachometer
Electro-Mechano Co
Esterline Angus
Foxboro Company
GE Apparatus Sales Div
Gilmore Industries
Kahn & Co
Karfund Co
Leeds & Northrup
Metron Instrument
M-H Brown Instrs Div
Natel Engrg Co
Norwood Controls
Potter Aeronautical
Sanborn Company
Sticht Co Herman
Thermo Electric
WacLine Inc
Waugh Engrg Co
Westberg Mfg Co
Westinghouse Electric
Westronics Inc
Wheelco Instruments Div
Zernickow Co O

TACHOMETERS, Speed Limit Control
Airpax Electronics
Assembly Products Inc
Automatic Timing & Contls
Beckman/Berkeley Div
Bill Jack Scientific
Bristol Co
California Controls
Computer Measurements
Dalmotor Div
Daystrom/Weston
Designers for Industry
Dynapar Corp
Electric Tachometer
Electro-Mechano Co
Electro Products Labs
Esterline Angus
FAE Instrument
Gilmore Industries
Jones Motrola
Kahn & Co
Leeds & Northrup
Machinery Electrification
Marx Co Clarence J
Metron Instrument
Muirhead Instrs
Murphy Mfg Inc
Natel Engrg Co
Norwood Controls
Potter Aeronautical
Sanborn Company
Standard Electric Time
Sticht Co Herman
Tapco Group
Varo Mfg Co
WacLine Inc
Waugh Engrg Co
Westberg Mfg Co
Zernickow Co O

TACHOMETERS, Stroboscopic
Chadwick-Helmuth
General Radio
Kerneo Instruments Co
Performance Measurements
Standard Electric Time
Sticht Co Herman
Westberg Mfg Co

TACHOMETERS, Vibrating Reed
Biddle Co James G
Epic Inc
J-B-T Instruments Inc
Karfund Co
Norden Div
Stewart-Warner Corp
Sticht Co Herman
Verdell Instrument

TACHOSCOPES
Biddle Co James G
Sticht Co Herman
Zernickow Co O

TELEMETERING SYSTEMS, Electrical, including Remote-Control Equipment
Advanced Instr Corp
Aeronaut & Instr Div
Airborne Instr Lab
Aircraft Armaments
Airpax Electronics
American Bosch Arma
American Data Div
American Electronics Inc
American Meter Co
Applied Electronics
Applied Science Corp
Arnoux Corp
Automatic Control Co
Automatic Electric
Automation Dynamics
Bailey Meter Co
Belfort Instrument
Bendix-Friez Instr
B-I-F Industries
Borg-Warner Controls
Bristol Co
Brooks Instrument
Bulova Research
Calif Computer Prods
Century Elx & Insts
Consol Electrodynamics
Consolidated Systems
Control Corp
Control Equipment Corp
Control Panel Corp
Cooper Development
Cunningham Son & Co
Curtiss Wright Inst
Daystrom/Mil Elx
Designers for Industry
Detroit Controls
Diamond Power Specialty
Di/An Controls
Digitran Co
Dymec
Dynatronics Inc
Electro-Mechanical Res
Electronic Controls Inc
Electronic Engrg Co Calif
Electronic System Dev
Erie Resistor
Fomeo Inc
Fischer & Porter Co
Foxboro Company
Gates Radio Co
General Devices
GE Apparatus Sales Div
General Time Central Res
Genesys Corp
Geotechnical Corp
GPE Controls
Guilton Industries
Hallamore Electronics
Hamilton Standard Div
Haydon Co A W
Healy-Ruff Co
Hoover Electronics
Instrument Lab Inc
Instruments Inc
Kellogg Switchboard
Land-Air Inc
Leach Corporation
Leeds & Northrup
Lel Inc
Lundell & Co
Lundy Mfg Corp
Lynch Communication
Magnasyne Mfg Co
Manning Maxwell & Moore
Micro Gee Products
Midwestern Instrs
M-H Brown Instrs Div
Monitor Systems Inc
Moore Associates
Motorola Military Elx
Mycalex Corp of Amer
Nacimco Products
Natel Engrg Co
North Electric Co
Northeast Electronics
Northern Radio Co
Norwood Controls
Oil Well Water Locating
Panoramic Radio Prods
Pearce-Simpson Inc
Philco Corp
Radiaphone Co
Radiation Inc
Radio Frequency Labs
Reliance Instr Mfg
Rotary Devices Corp
Sangamo Electric Co
Shand and Jurs
Sierra Electronic Corp
Simplex Valve & Meter
Solid State Electronics
Somex Inc
Southwestern Indus Elx
Sparling Equipment Div
Spectrol Electronics
Stavid Div
Strand Engrg Co
Telechrome Mfg Corp
Telectro Industries
Tele-Dynamics Div
Union Switch & Signal
United Control Systems
United Electrodynamics
United Engineers Inc
Warner & Swasey Co
Warren Mfg Co
WE-Instr & Control Sys
WE-Power Control & Comm
Westinghouse Electric
Wheelco Instruments Div
Wianeko Engrg Co

TELEMETERING SYSTEMS, Pneumatic
American Meter Co
Applied Electronics
Automation Dynamics
Bailey Meter Co
B-I-F Industries
Bristol Co
Brooks Instrument
Fischer & Porter Co
General Devices
Instrument Lab Inc
Mason Neilan
M H Brown Instrs Div
Moore Products Co
Mycalex Corp of Amer
Powers Regulator
Radiaphone Co
Sangamo Electric Co
United Electrodynamics

TELEMETERING SYSTEMS, RF, including Microwave, Radio Remote Control
A R & T Electronics Inc
Adams-Russell Co Inc
Adler Electronics
Advanced Electronics
Airborne Instr Lab
Aircraft Armaments
American Bosch Arma
Applied Electronics
Applied Science Corp
Automatic Electric
B-I-F Industries
Borg-Warner Controls
Bristol Co
Budd Lewyt
Bulova Research
Consolidated Systems
Control Corp
Cooper Development
Cubic Corp
Cunningham Son & Co
Dalmotor Div
Daystrom/Mil Elx
Decker Corp
Designers for Industry
Diamond Power Specialty
Dorsett Electronics Labs
DuMont Labs Allen B
Dynatronics Inc

Electro-Mechanical Res
Electronic Comm
Electronic Controls Inc
Electronic System Dev
Epsco Inc
Ford Instr
General Communication
General Devices
General Mills Inc
General Railway Signal
Geotechnical Corp
Guilton Industries
Hallamore Electronics
Instrument Lab Inc
Intercontinental Elx
Land-Air Inc
Lel Inc
Lynch Communication
Mallory & Co P R
Midwestern Instrs
Moore Associates
Motorola C & E
Motorola Military Elx
National Standard Elx
Niagara Frontier Div
Northeastern Engrg
Oil Well Water Locating
P and H Electronics
Parsons Co Ralph M
Pearce-Simpson Inc
Philco Corp
Probescope Co
R S Electronics Corp
Radiaphone Co
Radiation Inc
Radio Frequency Labs
Raytheon Missile Sys
Servo Systems Co
Sierra Electronic Corp
Solid State Electronics
Sonex Inc
Southwestern Indus Elx
Spectra Electronics
Stavid Div
Strand Engrg Co
Tapco Group
Technology Instr (Mass)
Telechrome Mfg Corp
Telectro Industries
Tele-Dynamics Div
United Control Systems
United Electrodynamics
United Shoe Machinery
Vapor Recovery Systems
Westinghouse Electric
Wiancko Engrg Co

TELEVISION, Industrial

Bendix Friez Instr
Blunder-Tongue Labs
Dage Television
Designers for Industry
Diamond Power Specialty
DuMont Labs Allen B
Entron Inc
GE Apparatus Sales Div
GPL Division
Hallamore Electronics
Image Instruments
I T T Idus Prods Div
Motorola C & E
Norden Division
Philco Corp
RCA Industrial Elx
Stavid Div
Telechrome Mfg Corp
Tel-Instrument Elx
Zoomar Inc

TEMPERATURE ALARM SYSTEMS

Advanced Technology Labs
Aero Research Instr
American Meter Co
Amot Controls Corp
Armour Corp
Assembly Products Inc
Atkins Technical Inc
Automation Dynamics
B and F Instruments
Barber-Colman
Bristol Co
Burling Instrument
California Controls
Chrono-Log Corp
Daystrom Control System
Daystrom/Weston
Detroit Controls
Edison Industries T A
Electro Devices (Mo.)
Electro-Logic Corp
Electronic Controls Inc
Energy Controls
Falcon Alarm Co
Fischer & Porter Co
Foxboro Company
Fulton Syphon Div
General Controls
GE Apparatus Sales Div
Gilmore Industries
Hagan Chem & Controls
Hamilton Standard Div
Hawk Tool & Engrg
Hickok Electrical Instr
Illinois Testing Labs
Kahn & Co
Kidde & Co
Leeds & Northrup
Lundell & Co
Mack Electric Devices
McIlvaine O T
M H Brown Instrs Div
M-H Industrial Controls
Monitor Systems Inc
Murphy Mfg Inc
Norwood Controls
Panellit Inc
Philadelphia Scien Glass
Precision Thermometer
Pyrometer Instr Co
Radiation Electronics
Research Industrial Lab
Ruge Associates
San Diego Scientific
Scientific Instrument
Southwestern Indus Elx
Spectra Electronics
Stevens Mfg Co
Stromberg Carlson Co
Swartwout Div
Taylor Instrument
Temperature Engrg Corp
Testing Machines Inc
Thermo Electric
Trerice Co H O
US Gauge Div
Universal Match
United Electric Controls
Victory Engrg Corp
West Instrument
WE-Director System
Westronics Inc
Wheelco Instruments Div
Yellow Spring Instr

TEMPERATURE CALIBRATION EQUIPMENT

Aero Research Instr
Airborne Instr Lab
Arcweld Mfg
B and F Instruments
Bristol Co
Electric Hotpack
Gilmore Industries
Hallikainen Instrs
Instru Development Labs
Kahn & Co
Leeds & Northrup
McHugh & Son Raymond F
M-H Brown Instrs Div
Missimers Inc
Pickard & Burns
Pyrometer Instr Co
Radiation Electronics
Rosemount Engrg Co
Ruge Associates
Spectra Electronics
Stromberg Carlson Co
Temperature Engrg Corp
Thermo Electric
Trans-Sonics
Trent Inc
Trerice Co H O
United Electric Controls
Waukesha Motor Co
Westronics Inc
Wiancko Engrg Co
Winslow Company Inc
Victory Engrg Corp

TEMPERATURE CONTROLLERS AND REGULATORS

Aeronaut & Instr Div
Allen-Bradley
Amot Controls Corp
Andersen Labs
Annin Company
Apex Scientific Co
Appalachian Electronic
Arnoux Corp
Assembly Products Inc
Astra Technical Instr
Atkins Technical Inc
Atlas Valve Co
Bailey Co Chas M
Bailey Meter Co
Barber-Colman
Bayley Instrument
Black Sivalls & Bryson
Blue M Electric
Brabender Instr C W
Bristol Co
Burling Instrument
Bytrex Corporation
Cash Co A W
Cash Valve Mfg
Chatham Controls
Controls Co of Amer
Cutler-Hammer
Daystrom/Weston
Detroit Controls
Deutsch Co
Dickson Co
Eclipse Fuel Engrg
Electronic Control
Electronic Controls Inc
Electronic Processes Corp
Epic Inc
Fairfield Engrg
Fielden Electronics
Fischer & Porter Co
Foster Engineering Div
Foxboro Company
Fulton Syphon Div
General Controls
GE Apparatus Sales Div
General Regulator
GPE Controls
H-B Instrument
Hagan Chem & Controls
Hallikainen Instrs
Hammel-Dahl

HAGAN TEMPERATURE MONITOR

Scans and monitors equipment temperatures from thermocouple inputs, and will also accommodate inputs from flow, pressure etc. Rack mounted, the Hagan Kybernetes Indicator Monitor has these features:

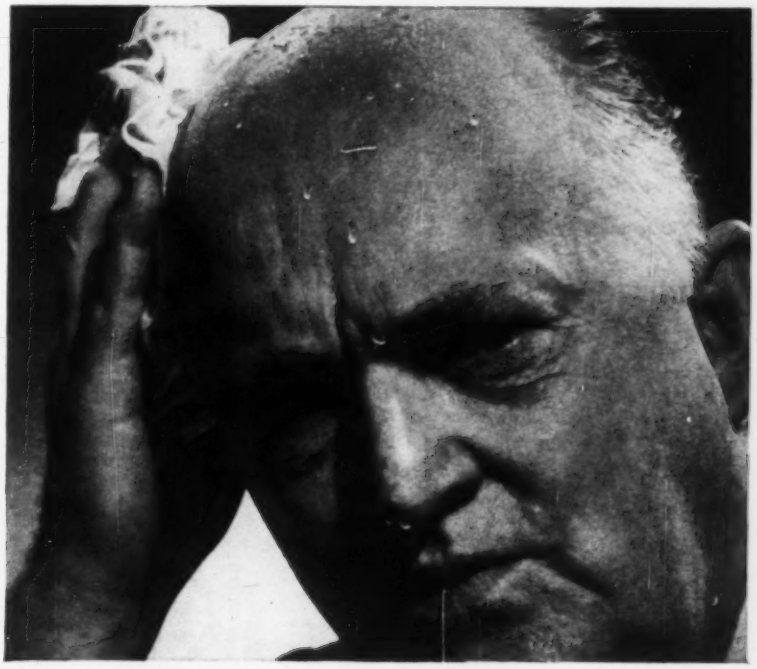
- Continuous alarm scanning at the rate of 5 points per second.
- Individual setting of high and/or low alarm points.
- Alarm scanning not interrupted during readout on the T.I.
- Unaffected by variations in thermocouple lead lengths.
- Operational check for all circuits.

HAGAN CHEMICALS & CONTROLS, INC.

DIVISIONS: CALGON COMPANY, HALL LABORATORIES

HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Flumendosa No. 13, Milano, Italy

CIRCLE 105 ON READER-SERVICE CARD



DON'T GET IN A **SWEAT** ABOUT **TEMPERATURE** CONTROL... **standardize on Bristol pyrometer supplies and solve the problem, once and for all.**

Everyone knows how interrupted pyrometer service can cut production, increase costs, impair product quality and whittle away at profits. Good way to minimize or stop these troubles: Lay in a supply of Bristol's thermocouples, protection tubes, radiation-unit accessories, refractory insulators, mounting fixtures, thermocouple extension wire, switches, and ink. They're available in sizes and types to fit all standard installations.

The outstanding quality and superlative reliability of Bristol pyrometer accessories is the product of more than 70 years of instrument building, 55 years of industrial pyrometry.

Write for complete data on Bristol pyrometer accessories today. The Bristol Company, 130 Bristol Road, Waterbury 20, Conn. O.12

BRISTOL ...for improved production through measurement and control

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

CIRCLE 106 ON READER-SERVICE CARD

Fenwal Precision Temperature Control and Detection Devices

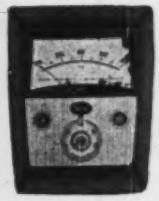
CONTROL ELEMENTS OF THERMOSWITCH® UNITS

In Standard Types and Sizes, also Midget and Miniature Units, control is based on a simple and unique differential expansion principle. A single-metal shell always in direct contact with the medium being controlled, contracts or expands instantly with temperature changes, making or breaking totally enclosed electrical contacts.

In Snap-Action Units, control is provided by an expandable liquid acting on a bellows assembly. The bellows motion, actuated by volume changes of the liquid, operates the switch contacts through a push rod. In Fenwal units, the liquid is outside the bellows, adjacent to the shell, for shorter heat transfer path and greater sensitivity.

In all Units each control setting is easily adjustable. High resistance to shock and vibration is characteristic, together with hermetic-sealing and many different temperature ranges.

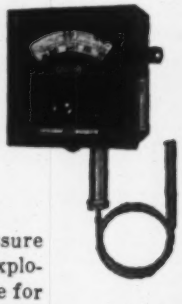
ELECTRONIC CONTROLLERS



Thermistor Indicator Controller (Series 560). For industrial or laboratory applications. Sensitivity 0.25% of scale range. Temperature ranges −100°F to +600°F. Proportional and on-off control. Bulletin MC-140.

Unit Thermistor Controls (Series 535). For all modern control equipment, systems and processes. Utilizes temperature-resistance property of thermistors in transistorized circuit for precise control and reliability. Bulletin MC-179.

NEW TEMPERATURE INDICATING CONTROLLERS



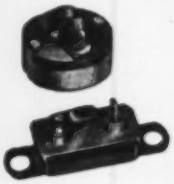
The New Series 541 bulb-and-capillary controllers offer single or dual switch control, choice of four snap-switch types and five temperature ranges: −150°F to +200°F, 50°F to 200°F, 50°F to 300°F, 50°F to 400°F and 50°F to 700°F. Special ranges available on request. Corrosion-proof capillaries and bulbs assure long life and easy operation. Explosion-proof modification available for single switch models. Bulletin MC-176.

INDUSTRIAL UNITS

A standard, cartridge type THERMOSWITCH unit. Compact, self-contained in a wide variety of mounting heads for temperatures ranging from −100°F to +400°F, or −100°F to +600°F. Also furnished in higher ranges. Bulletin MC-177.

MIDGET AND MINIATURE UNITS FOR TIGHT SPOTS

Midget Units. Outside stainless steel shell diameter of ¼" provides high sensitivity and resistance to vibration, assuring accurate control under severest conditions. Temperature range: −50°F to +500°F. Bulletin MC-124.



Miniature Units. Sugar-lump size, with stainless steel shell plus high sensitivity and vibration resistance. Temperature range: −20°F to +275°F. Available in adjustable and hermetically-sealed types. Bulletin MC-124.

SNAP-ACTION UNITS

Single and Dual Types. Single has one snap-switch, dual has two. For high current applications, controls loads up to 20 Amps, 125 Volts D.C., or 10 Amps, 250 Volts A.C. without relays. Liquid-filled sensing element assures minimum heat transfer path, fast response, control within ±2°F. Thousands of variations possible. Temperature ranges: from −75°F to +300°F. Single Type Bulletin MC-120. Dual Type Bulletin MC-143.

For complete information about Fenwal devices, or about modifications for special applications, write us.

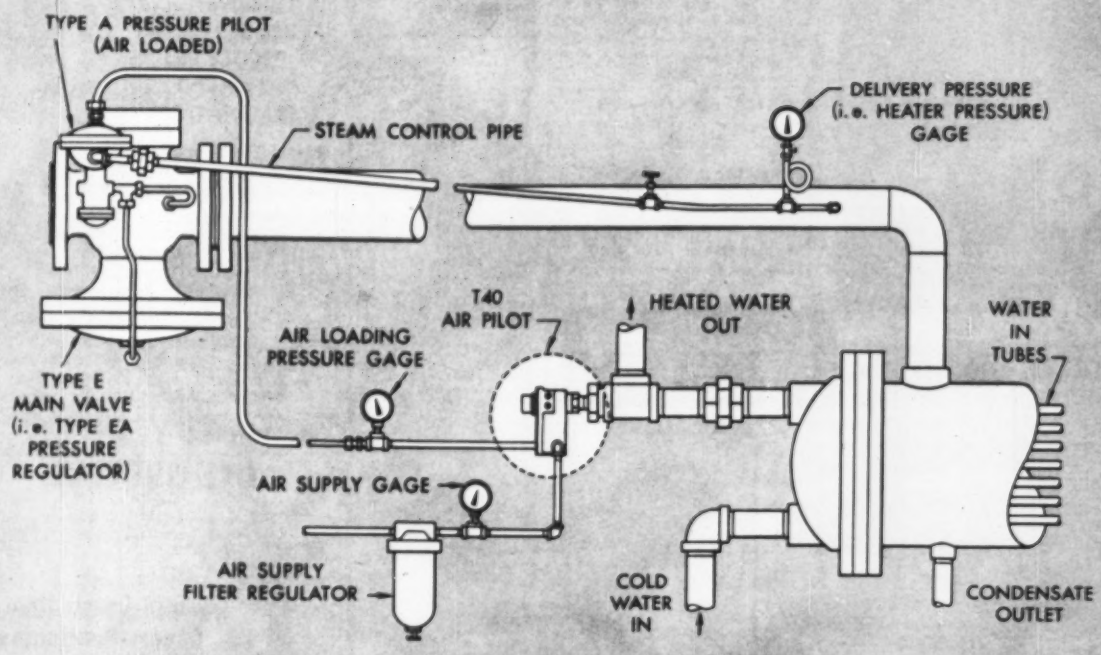
Fenwal Incorporated, 3610 Pleasant St., Ashland, Mass.

Fenwal CONTROLS TEMPERATURE . . . PRECISELY

CIRCLE 107 ON READER-SERVICE CARD

CONTROL TIPS:

New Spence Temperature Control System with Cascade Control Accuracy at Regulator Costs


TYPE A PRESSURE PILOT (AIR LOADED)
STEAM CONTROL PIPE
DELIVERY PRESSURE (i.e. HEATER PRESSURE) GAGE
T40 AIR PILOT
HEATED WATER OUT
WATER IN TUBES
AIR LOADING PRESSURE GAGE
TYPE E MAIN VALVE (i.e. TYPE EA PRESSURE REGULATOR)
AIR SUPPLY GAGE
AIR SUPPLY FILTER REGULATOR
COLD WATER IN
CONDENSATE OUTLET

TYPE EAT40 AIR-CONTROL TEMPERATURE REGULATOR (Patent Pending)

In a recent installation the new Spence air-control temperature regulating system provided:

- ±5°F control accuracy under wide and instantaneous load swings of 210 to 80 gallons per minute.
- Up to 50% reduction in cost as compared to instrument systems of similar accuracy.

This unique cascade-type control with throttling range adjustment independent of maximum heater pressure was developed to meet today's demand for greater control accuracy.

Additional features of the new Spence Temperature Control System include:

- 200°F wide adjustable temperature range
- Adjustable speed of steam pressure change
- Over and under temperature protection
- Pressure limit control
- Fast response
- Very low air consumption
- Field reversible for heating or cooling

The Spence Type EAT Air Control Temperature System, when properly installed, will tame wide ranging, fast changing loads of instantaneous heaters and modern heat exchangers. The cascade principle plus the use of an extremely fast responding bi-metal temperature sensing element reduce time lags and provide control stability.

Here's how the new Spence system operates:

Quick response is based on a bi-metal temperature sensing element.

Temperature pilot continuously regulates a loading air pressure.

This loading signal, when applied to a pressure regulator to reflect heater temperatures, causes it to adjust the main valve as changes in load require.

Spence has also developed a new pressure control system based on this same cascade principle. This system has a control accuracy of ½ psi or better from positive pressures through the vacuum range to 30" Hg.

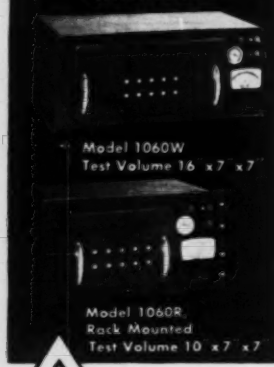
For complete information on these new air controlled temperature and pressure control systems, write for your copy of Bulletin 9.

SPENCE ENGINEERING COMPANY, INC.
Walden, New York SE-140A

CIRCLE 108 ON READER-SERVICE CARD

Precise

DELTA PORTABLE TEMPERATURE CHAMBERS



Temperature Control ±½° F From -100°F to +500°F

ACCURATE TEMPERATURE CONTROL, without overshoot and without drift

•

SAVES TIME by bringing the environment to the engineer instead of scheduling time in large, slow chambers.

•

VERSATILE—test for high and low temperatures in the same chamber.

•

AUTOMATIC CYCLING timer is available as auxiliary equipment.

•

Other chamber sizes and models are also available

•

DELTA DESIGN, Inc.
San Diego

Sales Office
7460 GIRARD AVENUE
LA JOLLA, CALIF.
GLencourt 4-1185 TWX LAJ 6453

CIRCLE 109 ON READER-SERVICE CARD

Hays Corporation
Hickok Electrical Instr
Hill & Co E Vernon
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Instruments Inc
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Lee Engrg Co
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Lee Engrg Co
Magnetic Controls Co
Manning Maxwell & Moore
Marsh Instr Co
Marshall Instrs
Martin & Co H S
Mason Instr Co
Mason Neilan
Mercoid Corp
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M-H Boston Div
M-H Brown Instrs Div
M-H Industrial Controls
Modern Lab Equip
Molex Products
Moore Products Co
Murphy Mfg Inc
Natl Electronics (Wyo)
National Standard Elx
Networks Elx Corp
Nicholson & Co W H
Norwood Controls
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Partlow Corp
Philadelphia Scient Glass
Powers Regulator
Precision Thermometer
Pyrometer Instr Co
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Republic Flow Meters
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Research Controls
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Ruge Associates
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Swartwout Div
Syracuse Electronics
Taylor Instrument
Temperature Engrg Corp
Thermo Electric
Thermo Electric Mfg
Thermo Products Co

THERMOCOUPLES

MINIATURE

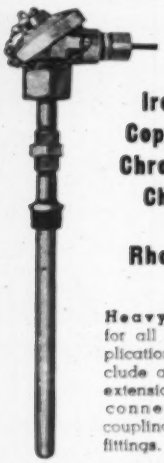
Iron-Constantan
Copper-Constantan
Chromel-Constantan
Chromel-Alumel
Platinum-Rhodium-Platinum

GASKET
BAYONET
RIVET
EXPOSED LOOP
PROTECTED
SHIELDED
STAGNATION

Industrial Miniature thermocouples are made for use in chemical and oil refining processes, power plants, plastic molding, etc.—for any application requiring a small-size yet sensitive assembly.

Aircraft Miniature Thermocouples, harnesses, connectors and extension wires, including "MIL" spec types, for turbo and reciprocating engines. Thermocouples designed for airborne or test stand use.

HEAVY DUTY INDUSTRIAL



Iron-Constantan
Copper-Constantan
Chromel-Constantan
Chromel-Alumel
Platinum-Rhodium-Platinum

Heavy Duty thermocouples for all industries and all applications. Accessories include a complete selection of extension wires, terminals, connection heads, quick-coupling connectors and fittings.

PROTECTION TUBES THERMO WELLS

Available in all commercial materials for all industries. Both built-up and bar stock.

Write for Thermocouple Catalog CFF

Thermo Electric Co. Inc.
Saddle Brook, New Jersey

In Canada—
Thermo Electric (Canada) Ltd., Brampton, Ont.

CIRCLE 112 ON READER-SERVICE CARD

Now! a "Four-Ways Better" THERMOCOUPLE

Revolutionary design uses thin flat ribbon thermocouple wires and mica insulation of .0002 inches thickness. Operational under extremely high velocity and pressure conditions.

- ✓ 1. Response time of less than 10 microseconds!
- ✓ 2. Maximum continuous service temperature of over 2000°F!
- ✓ 3. Operating pressure range to 50,000 psi!
- ✓ 4. Sensing tip has unlimited life!

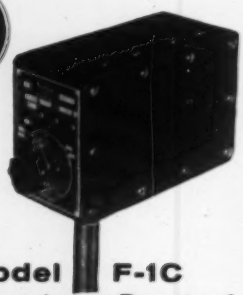
AVAILABLE IN ALL STANDARD THERMOCOUPLE ELEMENTS.

For complete details and data on other models write:

NANMAC CORPORATION

CIRCLE 110 ON READER-SERVICE CARD

Burling Controls



Model F-1C Temperature Control

All "F" Series Burling Temperature Controls are designed for any installation requiring a locally-mounted, non-indicating type control. Combine a differential expansion type sensing element and sturdy cast aluminum housing to provide an extremely reliable and durable heat-sensitive instrument for all temperatures up to 2000°F. Model F-2C & F-3C have multiple switches and may be used for:

- Combination Control and Alarm
- Alarm and Shut-Down
- Split Load Control
- Any Action at Two or Three Temperatures

Other instruments available for electric or pneumatic operation up to 2000° F.

Send for Bulletin 107-1

BURLING INSTRUMENT CO.
16 River Road • Chatham, N. J.

CIRCLE 111 ON READER-SERVICE CARD

THERMOCOUPLES

THAT WILL WITHSTAND

3000°F AND

UP TO 50,000 PSI

LONG LIFE

Sheath Diameters, .04 to .32

Thermocouple Lengths to 100 feet

Complete Thermocouples made to every requirement.

NEW, SIMPLE CONSTRUCTION

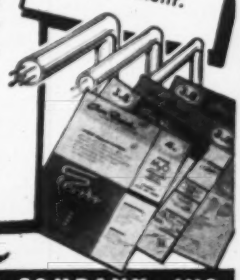
A metallic sheath compressed over ceramic insulated wire. Sheath can be bent and weldments can be performed without loss of insulation.

Write For new Bulletins

3.8 for complete thermocouples

4 for AEROPAK Ceramic insulated wire.

VSMF-REEL F



Aero Research INSTRUMENT COMPANY, INC.

DEPT. ICS, 315 NORTH ABERDEEN • CHICAGO 7, ILL.

Sales Representatives throughout the United States and Canada

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TEMPERATURE SENSITIVE PAINT and CRAYONS

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Tempil Corp
Tensitron Inc

THERMOCOUPLES, Base Metal (see also Wire, Thermocouple-Cat. 9)

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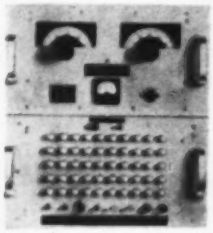
Pyro Service Co
Pyrometer Co of Amer
Pyrometer Instr Co
Revere Corp of Amer

TEMPERATURE MONITORING SYSTEM

Signals Dangerous Temperatures From Many Points



T-E's Temperature Monitoring System can be located near to or remote from the process area. When temperature exceeds desired, preset limit, danger is indicated by a red light, which remains red until the adverse temperature is corrected, or by an alarm which remains on until a silencing button is pressed.

- **Monitors up to several hundred points in one system**
- **Available with single or multiple set points**
- **Monitors temperatures from −320°F. to +3000°F.**
- **Can also monitor other variables**
- **Functions with thermocouples or resistance bulbs**
- **Signals may be transferred to indicators or recorders**
- **Continuous scanning**

Write for bulletin 72-FF

Thermo Electric Co. Inc

Saddle Brook, New Jersey

In Canada—
Thermo Electric (Canada) Ltd., Brampton, Ont.

CIRCLE 114 ON READER-SERVICE CARD

HAGAN CPM-1 TEMPERATURE CONTROLLER

For the control of temperatures where high precision is a must, the CPM-1 Controller uses Hagan PowrAmp for initial amplification, with magnetic amplifiers for summing and integration. A saturable reactor forms the final control element, and proportional band, reset and rate action are available.

For all types of electric heating applications, the Hagan CPM-1 Controller offers precision digital set point and stepless fractional degree regulation. The CPM-1 will handle up to 330 kva.

HAGAN CHEMICALS & CONTROLS, INC.

DIVISIONS: CALGON COMPANY, HALL LABORATORIES

HAGAN BUILDING, PITTSBURGH 30, PA.

In Canada: Hagan Corporation (Canada) Limited, Toronto
European Division: Via Flumendosa No. 13, Milano, Italy

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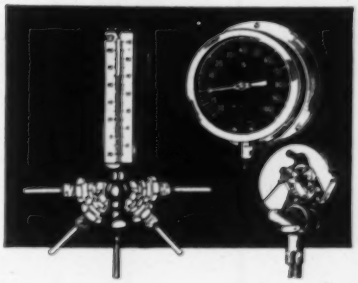
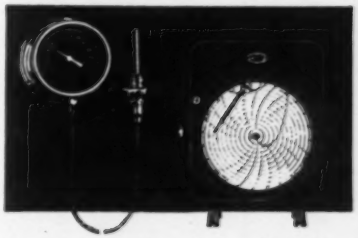
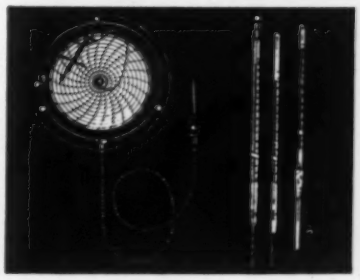


The shortest distance between need and source



for accurate, long-lasting instruments to indicate



and record temperature, pressure and humidity is the distance between you and a Weksler catalog.

Weksler has long been the first name for standard and custom built instruments made to serve your particular industry best.

It will pay you to know Weksler instruments better. Write today for our condensed catalog.

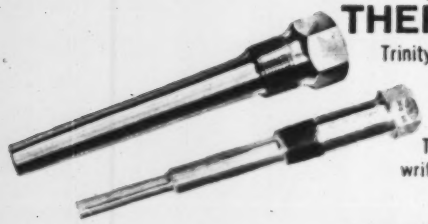
WEKSLER INSTRUMENTS

WEKSLER INSTRUMENTS CORP.

FREEPORT, L. I., NEW YORK

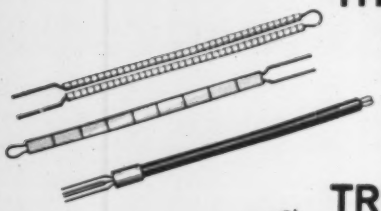
INDICATING AND RECORDING INSTRUMENTS FOR TEMPERATURE, PRESSURE AND HUMIDITY

CIRCLE 116 ON READER-SERVICE CARD



THERMOWELLS

Trinity Thermowells fit right, work right and last longer. Made of certified materials to the most exacting tolerances in the industry, Trinity Thermowells are backed by a written guarantee accompanying each standard well.



THERMOCOUPLES

A complete selection of wire materials and sizes, welded to meet or exceed the industry's standards assure you accurate performance in every installation when you select a Trinity Thermocouple.

TRINOX

Precise thermocouple assemblies sheathed in a protective well for miniaturized, or hard-to-reach points in a system or assembly. Also available in multi-point assemblies. Trinox is available in sizes down to .040" in diameter.

TRINITY

WRITE FOR COMPLETE MANUALS...

TRINITY EQUIPMENT CORPORATION, CORTLAND, NEW YORK

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Where control depends on measurement!
CON-O-PAK THERMOCOUPLES
FROM -300°F TO 4000° PLUS
The world's finest thermocouples. New process increases precision and temperature range. Exceeds all military and commercial specs. Con-O-Pak is used in aircraft, missiles, nucleonics, chemical processing. Useful data? . . . Ask for "The Con-O-Pak Story."
CON-O-PAK
CONTINENTAL SENSING INC
1950 N. Ruby St. Melrose Park, Illinois

FLEXIBLE AND SHEATHED THERMOCOUPLES • THERMOCOUPLE WIRE • HEATING ELEMENTS • CONNECTORS

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Rayco Instruments Inc
Slocomb Co J T
Smith Mfg Co Inc
Thermo Electric
Thermo Products Co
Trinity Equipment
West Instrument
Wheelco Instruments Div

THERMOCOUPLES, Contact Type (see also Thermometers, Surface)

Advanced Dynamics
Advanced Technology Labs
Aero Research Instr
Astra Technical Instr
Atkins Technical Inc
Atlantic Pyrometers Inc
Barber-Colman
Bristol Co
Champion Wire & Cable
Conax Corp
Continental Sensing Inc
Epic Inc
Gordon Co Claud S
Harco Labs
High Temperature Instrs
Illinois Testing Labs
Leeds & Northrup
Lewis Engrg Co
McHugh & Son Raymond F
Motech Co
Nacimco Products
Nanmac Corp
Pacific Transducer Corp
Philco Corp
Propulsion Dev Labs
Pyro-Electric Inc
Pyro Service Co
Pyrometer Co of Amer
Pyrometer Instr Co
Revere Corp of Amer
Rayco Instruments Inc
Slocomb Co J T
Smith Mfg Co Inc
Thermo Electric
Thermo Products Co
Trinity Equipment
West Instrument
Wheelco Instruments Div

THERMOCOUPLES, Immersion

Advanced Dynamics
Aero Research Instr
Astra Technical Instr
Atkins Technical Inc
Barber-Colman
Bristol Co
Champion Wire & Cable
Conax Corp
Continental Sensing Inc
Epic Inc
Foxboro Company
Gordon Co Claud S
Harco Labs
High Temperature Instrs
Illinois Testing Labs
Leeds & Northrup
Lewis Engrg Co
Marshall Co L H
McHugh & Son Raymond F
Metals & Controls Div
M-H Brown Instrs Div
Motech Co
Nacimco Products
Nanmac Corp
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Propulsion Dev Labs
Pyro-Electric Inc
Pyro Service Co
Pyrometer Co of Amer
Pyrometer Instr Co
Revere Corp of Amer
Richard Co Arklay S
Slocomb Co J T
Smith Mfg Co Inc
Thermo Electric
Thermo Products Co
Trinity Equipment
West Instrument
Wheelco Instruments Div

THERMOCOUPLES, Rare Metal

Advanced Dynamics
Advanced Technology Labs
Aero Research Instr
Atkins Technical Inc
Atlantic Pyrometers In
Barber-Colman
Bristol Co
Continental Sensing Inc
Epic Inc
Foxboro Company
Gordon Co Claud S
Harco Labs
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SPECIAL THERMOCOUPLES FOR TRANSIENT TEMPERATURES

MINIATURE COAXIAL THERMOCOUPLES FOR SURFACE TEMPERATURES

1 MICRO SECOND TIME CONSTANT

FINE-WIRE (.002") THERMOCOUPLES FOR GAS TEMPERATURES

10 MILLISECONDS TIME CONSTANT

The Motech Co.

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Dillon & Co W C
Eastman Kodak
Fischer & Porter Co
H-B Instrument
Lewis Engrg Co
Manning Maxwell & Moore
Marsh Instr Co
Marshall Instrs
Moeller Instr
Nurnberg Scientific
Pacific Transducer Corp
Palmer Thermometers
Powers Regulator
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Rochester Mfg Co
Royce Instruments Inc
Ryan Recording Thermom
Soiltest Inc
Taylor Instrument
Tel-Thru Mfg Co
Trerice Co H O
Weksler Instruments
Welch Mfg Co W M

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Bristol Co
Controls Co of Amer
Daystrom/Weston
Dickson Co
Dillon & Co W C
Electric Autolite
Fischer & Porter Co
Foxboro Company
Green Instrs Henry J
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H-B Instrument
Johnson Service Co
Manning Maxwell & Moore
Marsh Instr Co
Martin & Co H S
M-H Industrial Controls
Moeller Instr
Moore Products Co
Nurnberg Scientific
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Palmer Thermometers
Partlow Corp
Philadelphia Scien Glass
Powers Regulator
Rochester Mfg Co
Scientific Instrument
Seegers Mfg
Taylor Instrument
Testing Machines Inc
Trerice Co H O
US Gauge Div
Weksler Instruments
Welch Mfg Co W M

THERMOMETERS, Electrical Resistance, Indicating, Recording and/or Controlling
Advanced Instruments
Aero Research Instr
Apex Scientific Co
Arnoux Corp
Astra Technical Instr
Atkins Technical Inc
Automation Dynamics
Bacharach Indus Instr
Bailey Meter Co
Barber-Colman
Bendix-Friez Instr
Bristol Co
Budd Co Inst Div
Consol Controls
Controls Co of Amer
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Crescent Engrg & Res
Daystrom/Weston
Edison Industries T A
Electronic Processes Corp
Fischer & Porter Co
Fisher Scientific
Foxboro Company
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Manning Maxwell & Moore
Manostat Corp
Marshall Instrs
Martin & Co H S
Minco Products
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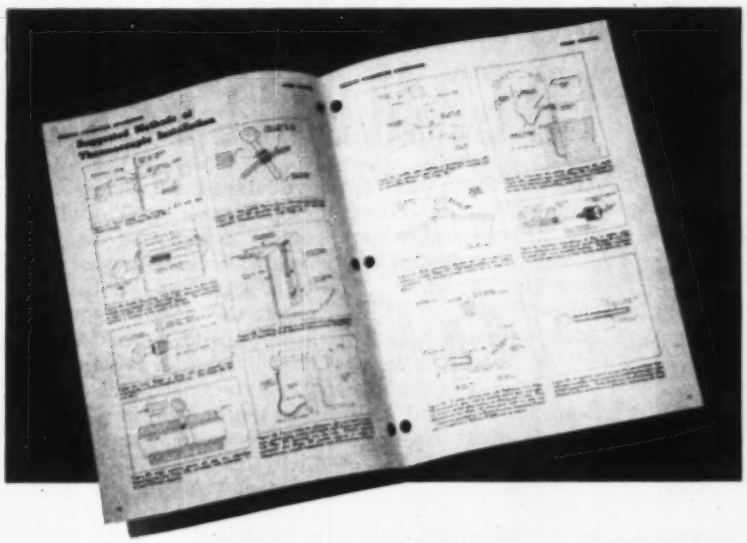

THE DEFINITIVE BOOK

on thermocouples and pyrometer accessories

It's still Bristol's big 56-page "Buyers' Guide and Users' Manual"—yours for the asking.

One of the most useful publications ever directed specifically to the industrial pyrometer user, this buyers' guide catalogs Bristol's comprehensive line of thermocouples, protection tubes, thermocouple wire and radiation unit accessories. But, in addition to this, it's a compendium of technical data for the pyrometer user—essential to newcomers to the field, valuable reference data to the old hand. Here's just a partial listing of topics discussed:

- Thermocouple types
- Factors affecting thermocouple life
- Thermocouple reproducibility
- Calibrated thermocouples
- Thermocouple insulation
- Thermocouple protecting tubes
- Thermocouple extension wires and cold-end compensation
- Selecting the right thermocouple and protecting tube
- Responsiveness of thermocouples

... plus more than 165 illustrations, plus 8 pages of thermocouple calibration tables. It's a manual you can't afford to be without. Write for your copy of Bristol's "Thermocouple and Pyrometer Accessories Buyers' Guide and Users' Manual," Bulletin No. P1238, today. The Bristol Company, 130 Bristol Road, Waterbury 20, Conn. O 32

BRISTOL ... for improved production through measurement and control

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

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Resistance Thermometer

● Platinum resistance temperature element measures —400F to + 1200F; transmits to precalibrated "plug-in" type receivers in Bailey a-c PYROTRON Receiver Recorder.

One to four continuous temperature records are made on a single 12 in. circular chart. Each recording pen responds instantly since it is controlled by a separate inertia-free electronic detector. Each detector has its own power supply. A small reversible electric motor balances the a-c Wheatstone bridge circuit, and drives the indicating, recording, and controlling features. The Bailey a-c PYROTRON Receiver Recorder may be furnished with pneumatic or electrical control.

Any combination of electrically or pneumatically transmitted factors may be combined with temperature in the same recorder which features continuous, one-year, automatic inking.

Request Product Specification E12-5 for Receiver Recorder and E51-6 for Resistance Temperature Elements and Protecting Wells.

BAILEY METER COMPANY
1041 IVANHOE ROAD CLEVELAND, O

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TRI-R

Electronic

THERMOMETER

THERMISTOR TYPE

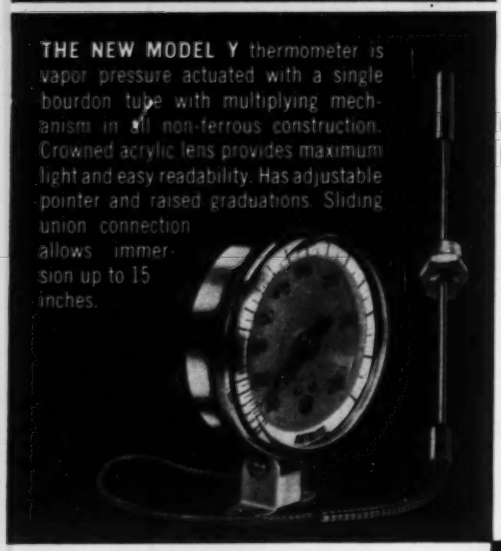
Rapid, accurate, low-cost, remote reading thermometer with many ranges and probes for medical, industrial and laboratory applications.

WRITE FOR BULLETIN K10

TRI-R INSTRUMENTS
144-13 JAMAICA AVE.
JAMAICA 35, NEW YORK

CIRCLE 122 ON READER-SERVICE CARD

THE NEW MODEL S solid filled thermometer offers 270 angular degrees of evenly calibrated arc in all non-ferrous metal construction. Adjustable pointer, crowned acrylic lens provides maximum light and easy readability. Raised graduations. Sliding union connection allows up to 15-inch immersion.



THE NEW MODEL Y thermometer is vapor pressure actuated with a single bourdon tube with multiplying mechanism in all non-ferrous construction. Crowned acrylic lens provides maximum light and easy readability. Has adjustable pointer and raised graduations. Sliding union connection allows immersion up to 15 inches.

Announcing... new

AUTOLITE®

DIAL INDICATING THERMOMETERS

Autolite thermometers are available in two time-tested Bourdon tube capillary thermal systems. **Model S** is solid liquid filled, and provides 270 angular degrees of evenly graduated arc. No delicate geared segments, pinions, hairsprings. Pointer action on a ratio of 1:1 with Bourdon system. Exceptionally rugged movement withstands heavy vibration and shock. Long life and accurate temperature indication is assured.

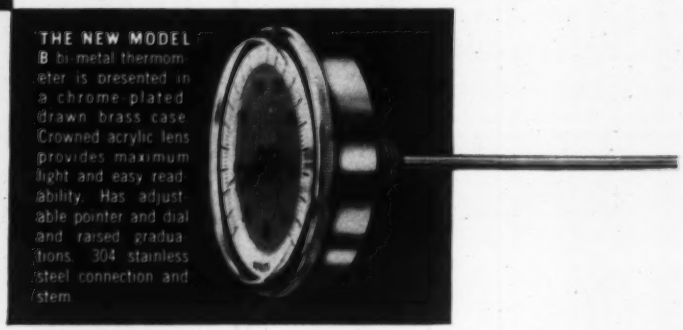
Model Y is vapor pressure actuated. Uses a single Bourdon tube and multiplying mechanism in all non-ferrous metal construction. Suitable for a variety of installations.

Autolite also has its new **Model B** bi-metal thermometer incorporating many features of Models S and Y, but employing a thermostatic bi-metal helix sensing element. Stainless steel stem and connection nut. Waterproof, non-ferrous case. Easy-to-remove crowned acrylic lens. Has adjustable pointer and raised graduations on dial.

Send Today for Descriptive Literature

IMPORTANT ADVANCED FEATURES

- *Raised graduations to reduce parallax error*
- *Adjustable bracket allows mounting variations of 150 degrees on horizontal axis*
- *Case rotates 90 degrees in either direction on vertical axis*
- *Crowned acrylic lens for maximum light on dial*
- *Adjustable pointer*
- *Sliding union connection nut allows 3 to 15 inches immersion. May be removed if not required*



THE NEW MODEL B bi-metal thermometer is presented in a chrome plated drawn brass case. Crowned acrylic lens provides maximum light and easy readability. Has adjustable pointer and dial and raised graduations. 304 stainless steel connection and stem.

INDUSTRIAL INSTRUMENT DIVISION • Port Huron, Mich.

THE ELECTRIC AUTOLITE COMPANY

CIRCLE 123 ON READER-SERVICE CARD

PALMER a great name in thermometers

PALMER "DIRECT DRIVE" 3½" DIAL THERMOMETER

An outstanding improvement in mercury actuated dial thermometers with external calibration feature.

- No Sector
- No Pinion
- No Linkage
- Accuracy
- Readability
- Angularity

Case . . . stainless steel, compensated for ambient temperature, external calibrating feature. Cover . . . clear plastic, gasket-sealed to stainless steel back-plate. Actuation . . . direct drive Bourdon coil. (No sector, pinion or linkage.) Stem . . . ½" diameter stainless steel, standard lengths: 4"—6"—8"—12", multiples of 6" up to 60" max. . . . Fittings . . . separable socket, union connection (½" or ¾" NPT), flange union.

PALMER 4½" DIAL THERMOMETER

Adaptable and interchangeable with all Industrial Thermometer applications.

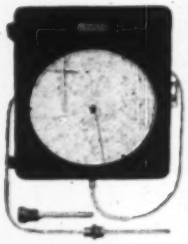
MERCURY-ACTUATED. Guaranteed accuracy. Size: 4½" Dial.

Designed for use as STRAIGHT or any ANGLE. With clear vision all-glass moulded case and metal back. Fittings: Plain, Union, Socket; adjustable or union Flanges.

STANDARD RANGES:

−30+130°F.	1°	0+300°F.	2°	0+600°F.	5°
0+150°F.	1°	0+400°F.	5°	+200+750°F.	5°
0+240°F.	2°	0+500°F.	5°	+200+950°F.	5°

or equivalent °C—no extra charge

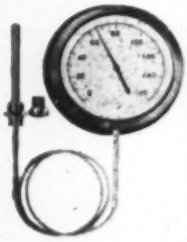


RECORDING and DIAL THERMOMETERS

With Flexible Tubing Connection.

Mercury-actuated, for extreme accuracy. Sturdy construction, very sensitive. All parts rust-proof. Stainless-steel bulb. Wall or Flush Mounting. Bottom or Back connection. Fittings: Plain, Union, Sep. socket; Adj. or Union Flanges.

Ranges: −40 to 1000°F. (or C).

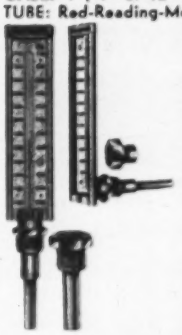


RECORDER: 12" die-cast alum. case; Black or white, satin or wrinkle finish; elec. or spring clock; 12 hr., 24 hr., or 7-day charts. One-pen or multiple pens. Also Fully compensated to correct for Ambient Temperature.

DIAL: 6" and 8" round case. Black or white finish. Easy-reading dial.

INDUSTRIAL THERMOMETERS with "Red-Reading-Mercury"

CASE: 7", 9" or 12" Extruded brass. Wide scale. Chrome finish.
TUBE: Red-Reading-Mercury Easy to Read. Thoroughly annealed for permanent accuracy. Protected by double-strength glass shield. Graduated scale.



Straight

FITTINGS: Fixed thrd., Union, Sep. Socket; adjustable or union Flange; parallel thrd. & locknut; special fittgs. to order.

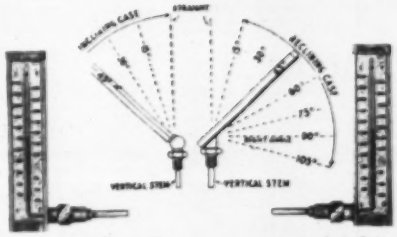
STEM: STRAIGHT and Misc. ANGLES. 3½" to 60", incl. thread.

THREAD: ¾" or 1" NPT (½" not recom.)

STANDARD RANGES:

−40+110°F	2°	+ 50+400°F	5°
0+100°F	1°	+100+550°F	5°
+30+180°F	2°	+200+750°F	5°
+30+240°F	2°	+200+950°F	5°
+30+300°F	2°		

Plain Mercury. Borosilicate tube. Centrigrade equiv.—no extra. Spec. Ranges—cost more.



Right Side Left Side

SMALL CASE THERMOMETERS

4" case ⅜" & ½" Fixed Thrd. Fttg.
6" case: ½" & ¾" Sep. Socket Fttg.
Extruded case. Durable Nickel finish.
"Red-Reading-Mercury". Guaranteed accurate.

LABORATORY AND PRECISION THERMOMETERS

All glass engraved mercury tube, with vivid RED column. Round or lens; Ring or button top; With or without metal armor; Total or partial Immersion (3" standard). Each in sep. box. All ranges: up to 750°F. (or C. equiv.).
Plain mercury. Borosilicate tube. +200+950°F. Special ranges & dimensions to order. Fractional division, A.S.T.M. etc.
Also handy 5" Pocket style. Annealed and guaranteed very accurate.

REPAIRS—To all makes of mercury Industrial Thermometers. With "Red-Reading-Mercury" (no extra cost) and new Extruded Brass case included. Guaranteed accurate. Reasonable price.

PALMER THERMOMETERS, INC.

Mfrs. of Industrial Laboratory, Recording and Dial Thermometers

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United Electric Controls
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Atkins Technical Inc
Bacharach Indus Instr
Eastman Kodak
Ever Ready
Fisher Scientific
Green Instrs Henry J
Greiner Co, Emil
Griebel Co
H-B Instrument
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Taylor Instrument
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Bristol Co
Davstrom/Weston
Dickson Co
Hill & Co E Vernon
Manning Maxwell & Moore
Marsh Instrument Co
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Moeller Instr
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THERMOMETERS, —Recording and Automatic Controlling . . . for temperatures from —125F to +1000F

Bristol Series 500 Thermometers, the product of over 70 years of instrument-making experience, feature the latest developments in instrument engineering.

In manufacturing hundreds of thousands of recording and automatic controlling thermometers, The Bristol Company has developed a variety of models, sizes, and temperature ranges to fill every requirement.

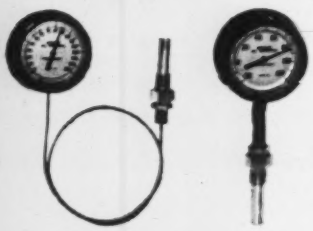
Write for Bulletin T840.

BRISTOL COMPANY

112 Bristol Rd., Waterbury 20, Conn.

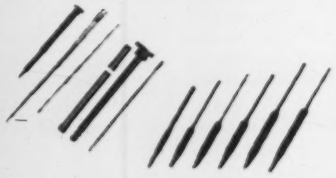
CIRCLE 125 ON READER-SERVICE CARD

DIAL INDICATING THERMOMETERS mercury actuated with anti-parallax dials to assure accurate reading. Made in 4½", 6" and 8½" sizes with flexible tubing, adjustable stems, single or two pointers, with or without electrical contacts. Can be furnished with plain bulb, union connection bulb or separable sockets in all lengths and alloys. Ranges available from minus 40° to plus 1000°F. or its equivalent in Centigrade.



ENGRAVED STEM THERMOMETERS with permanent pigment fused into glass. Made in standard and extreme precision grade in ranges from minus 150° to plus 1125°F. or Centigrade equivalent to meet Government, ASTM and other specifications. Enclosed PORCELAIN and PAPER SCALE Thermometers also available.

HYDROMETERS PLAIN FORM or COMBINED with THERMOMETER made in all scales, specify gravity, Baume, Brix, Twaddle, Balling scales, etc., available for all liquids. Standard and commercial grades.



WHERE ACCURACY IS THE TEST ... MOELLER MEASURES BEST

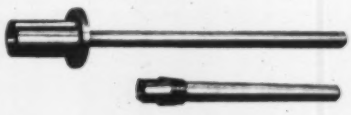
THERMOMETERS OF MATCHLESS QUALITY, FOR EVERY INDUSTRIAL NEED

Moeller Thermometers are engineered to provide easy, accurate reading in every industrial situation through rugged construction to the highest standards of quality.

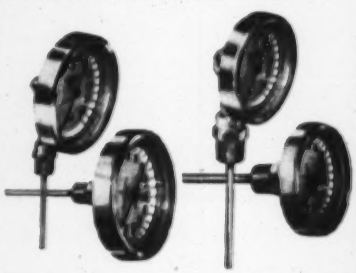
Thermometers for Industrial, Air Duct, Pipe Line, Closed Space, Recording, General Utility and Laboratory use . . . and on Vacuum Gauges, Hygrometers, Hydrometers, Psychrometers and Marine Specialties.

There's more than meets the eye in Moeller products. Designed with timelessness in mind, they are the result of engineering and production experience gained in over 90 years of design, manufacture and successful application of temperature measuring instruments.

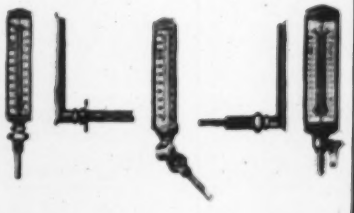
THERMOCOUPLE PROTECTIVE TUBES and WELLS and THERMOMETER TEST WELLS made in all sizes and alloys, and produced on specially designed equipment. These precision parts are drilled true and are concentric with the outside diameter. The surfaces are machined and tooled to the closest tolerance to permit maximum speed of response to temperature changes.



MOELLER DIMET DIAL THERMOMETERS are actuated by a powerful, specially processed bi-metal helix and feature 3" and 4½" anti-parallax dials to assure accurate reading from any angle. Furnished in new stainless steel cases and fixed stem. Available with union connection or separable sockets. Scale ranges from minus 100° to plus 1000°F. or Centigrade equivalents.



MOELLER INDUSTRIAL THERMOMETERS made in adjustable and all fixed forms — Straight angle, etc., in scale ranges from minus 120° to plus 1125°F. or its equivalent in Centigrade. Available in 5", 7", 9" and 12" scale sizes with plain stems, union connection stems and separable sockets in all stem lengths and alloys.



Send for literature on these Moeller products and on Recording Thermometers, Recording Psychrometers, Test Wells and Vacuum Gauges.

SINCE 1867

MOELLER INSTRUMENT COMPANY, INC.

132-10 89th AVENUE • RICHMOND HILL 18, N. Y.

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CIRCLE 126 ON READER-SERVICE CARD

TEL-TRU DIAL

THERMOMETERS

18-8 STAINLESS STEEL

Industrial

EASY TO READ—NON BREAKABLE

All popular Dial Ranges Fahrenheit or Centigrade

POCKET TYPE—Model PT-50, Service Man's Spot Check. Head diam. 1". Stem 5" Long x .150 diam. Hard Rubber Pocket Case.

GENERAL TYPE—Model GT-100. Head diam. 1¾". Stem 5"-8" Long x .142" & .150" diam. Adjustable Vessel Clasp; Manual Preset Indicator for Marking Temperature.

THREAD TYPE—Model GT-200. Head diam. 1¾". Standard ⅛" & ¼" NPT. Stainless Steel Connection Nut. Stem: 2½", 4", 6" Long x .150 diam. Measurements Include Thread.

THREAD TYPE—Model GT-300R With Re-Calibrator. Model GT-300 Without Re-Calibrator. Head diam. 3". Standard ½" NPT. Stainless Steel Connection Nut. Stem 2½" to 24" Long x .250" diam. Measurements include Thread.

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111 St. Paul Street, Rochester 5, N.Y.

Subsidiary of Germanow-Simon Machine Co., Inc.

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Ryan Recording Thermom
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Taylor Instrument
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Atkins Technical Inc
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Trerice Co H O
United Control Corp
Weksler Instruments
Yellow Spring Instr

THERMOMETERS, Thermistor (see also Thermistors-Cat. 8)

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Aero Research Instr
Atkins Technical Inc
Bristol Co
Electro-Medical Lab
GE Apparatus Sales Div
Kahn & Co
Marshall Instrs
M-H Brown Instrs Div
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Apex Scientific Co
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Brabender Instr C W
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Central Scientific
Control Products
Controls Co of Amer
Dales Co Franklin
Deutsch Co
Dole Valve Co
E-T-A Products
Edison Industries T A
Fulton Sylphon Div
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GE Apparatus Sales Div
G-V Controls
H-B Instrument
Hagan Chem & Controls
Johnson Service Co
Leslie Co
Mercoid Corp
Metals & Controls Div
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Norwood Controls
Nurnberg Scientific
Partlow Corp
Philadelphia Scien Glass
Pimex Inc
Powers Regulator
Stevens Mfg Co

Burling Controls

New

Model M-1C Burling Thermostat

The new M-1C Thermostat has been especially developed to satisfy the need for a compact and reliable on-off control or high temperature alarm. Provides the perfect heat sensitive instrument for all limited space, maintenance-free installations.

- Weathertight Aluminum Case
- Gray Hammertone Finish
- Operates by Differential Expansion of Solids
- Snap-Action Miniature Switch
- Available in range up to 1200°

Other instruments available for electric or pneumatic operation up to 2000° F.

Send for Bulletin 121

BURLING INSTRUMENT CO.

16 River Road • Chatham, N. J.

CIRCLE 129 ON READER-SERVICE CARD

A+

"thermophil" electronic

SURFACE THERMOMETERS

thermistor resistance sensors • by ranges, −148° to +554°F, −100° to 290°C • accuracies to ±0.1°C • 100 probe designs • AC & battery

A+

"c.n.s."

TEMPERATURE CONTROLLERS

platinum resistance bulbs controls test ovens within 0.2°C up to 1,200°C (2,200°F)

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THERMOCOUPLES

swaged, bayonet type, industrial . . . components, connectors, full selection

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JACK PANELS
CONNECTOR PANELS

for thermocouples

A+

"shaw"

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for very dry gases reads dewpoints to −150°C detects 1 part in 10 million new capacitance principle

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PORTABLE HUMIDITY INDICATORS

uses wet & dry thermistor sensors accurate to ±0.5% RH

ATKINS TECHNICAL INC.

1276 W. Third St. • Cleveland 13, Ohio • SU 1-1333

temperature & humidity instrumentation

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A+®

CIRCLE 128 ON READER-SERVICE CARD

For Accurate TEMPERATURE RECORDS at MODERATE COST

RANGES AVAILABLE

Temperature Range	One Rotation of Chart
−30° to +120°F	7 Days
−30° to +120°F	24 Hours
−30° to + 50°F	24 Hours
−20° to + 40°F	24 Hours
−20° to + 40°F	7 Days
−10° to + 50°F	24 Hours
−10° to + 50°F	24 Hours
10° to 90°F	24 Hours
30° to 60°F	7 Days
40° to 100°F	24 Hours
40° to 100°F	24 Hours
50° to 130°F	24 Hours
60° to 90°F	8 Hours
60° to 90°F	24 Hours
70° to 130°F	24 Hours
−25° to + 10°C	24 Hours
5° to 40°C	24 Hours

Use TEMPSCRIBE Recorders

BULB-TYPE (illustrated)—*For recording temperatures at a distance*
BI-METAL TYPE—*For recording temperatures in surrounding air*

- Portable—easily carried. Can be set on flat surface or hung on wall.
- Spring-wound instrument-type clock: 3 standard movements—8 hours, 24 hours or 7 days.
- Instrument measures 4½" x 5½" x 7½"; uses 4¼" diameter charts.
- Chart graduations easy-to-read; spaced uniformly over full range.
- Pen and its actuating components are in door. Doors are completely interchangeable to convert to any temperature range, or from bi-metal type to bulb-type.

Also available: (1) Interchangeable door with electro-magnetic armature to record running time of motors, burners, solenoid valves, etc. (2) Two-pen doors for recording temperature and electrical operation on same chart.

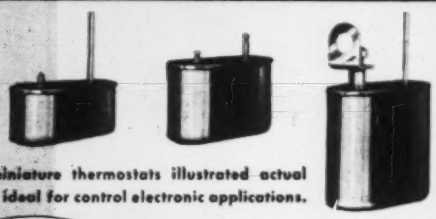
Write for Leaflets 786 and 872

BACHARACH INDUSTRIAL INSTRUMENT CO.

200 N. BRADDOCK AVE. • PITTSBURGH 8, PA. T-25

CIRCLE 130 ON READER-SERVICE CARD

HERMETICALLY SEALED
THERMOSTATS



These miniature thermostats illustrated actual size are ideal for control electronic applications.

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ULANET
ELECTRIC HEAT CONTROL ENGINEERS

THE ULTIMATE CHOICE OF THOSE WHO KNOW!

CARTRIDGE THERMOSTATS

Series FM Thermostats offer the only unit that can withstand mechanical clamping or pinching without effect on set calibration.

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Abrams Instrument
Alina Corp
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Amglo Corp
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Associated Control
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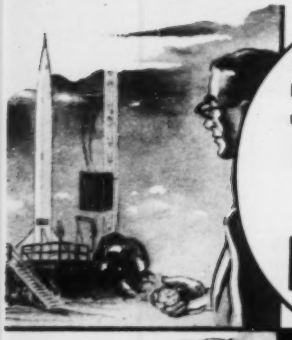

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A Subsidiary of American Manufacturing Company, Inc.

CIRCLE 133 ON READER-SERVICE CARD

JOHNSON PNEUMATIC CONTROL

FOR processing, heating, cooling, humidifying, dehumidifying, ventilating, air conditioning

PROCESS CONTROL

Automatic temperature and humidity control for a wide range of manufacturing and industrial process applications. Thermostats, special controllers, valves and dampers applied to tanks, dryers, vats, kettles, curing rooms, coolers, kilns, ovens, etc.

SPACE CONTROL

Automatic control for room temperature and humidities applied to radiators, radiant heating, unit ventilators, unit heaters, mixing units, and air distribution ducts.

NATIONWIDE SERVICE

Johnson's own full-time engineers and installation men are available in over 105 direct factory branches, and resident service mechanics are located in an additional 200 cities. Whether your problem involves a complete system or a single controller, take advantage of Johnson's unmatched experience in solving all types of control problems.

Call your local Johnson office for information and product literature, or write for Condensed Catalog.

T-400 Room Thermostat

H-103 Room Humidostat

V-211 Three-Way Mixing Valve (Rubber Diaphragm)

T-1210 Room Temperature Transmitter

T-1270 Receiver Controller

THERMOSTATS: Room Thermostats are furnished in a wide selection of adjusting features allowing accessible, key or closed adjustment of the temperatures to be maintained. All room thermostats are equipped with highly sensitive bimetallic temperature-measuring elements.

Immersion insertion and remote bulb thermostats for control of temperatures in ducts, tanks, and enclosed chambers. Remote bulb thermostats have liquid-filled capillary systems. Standard capillary length is 8 ft., with 15, 25, 35, 50, 65, 75 and 85 ft. lengths available on special order.

HUMIDOSTATS: Johnson humidity control instruments are affected by the amount of moisture in the air and maintain any desired relative humidity. Available in room and insertion patterns with bi-wood, bow-wood, wood cylinder, or horn elements. The most sensitive control within 1% relative humidity, even as high as 95% at 200 F. Johnson Humidostats control all types of humidifiers.

HUMIDIFIERS: Dependable "steam grid" type (perforated pipe supplied with low pressure steam) or pan type (copper evaporating pan, brass heating coil and float control) for central fan systems.

VALVES: Simple and rugged. Diaphragms of special molded rubber, resistant to age and deterioration, operate the valve stems against the pressure of dependable springs. No complicated moving parts. Made in all standard sizes and patterns. Normally open or normally closed. Also, three-way mixing and by-pass valves. For steam, water, other liquids and gases. Where maximum power is required for repositioning at the slightest demand of controlling instruments, Johnson molded rubber diaphragm valves are fitted with Johnson's dependable Pilot Positioner, for smooth proportional operation, independent of friction and pressure variations.

DAMPERS: Galvanized sheet steel blades in flat iron frames with adequate bracing to form a rigid assembly. Finished in black lacquer. Brass pins in steel bearings or ball bearings. Special corrosion-resisting finishes on order. Angle iron frames optional. Dampers of monel metal, aluminum, copper, rust-resisting steel, etc., furnished on special order.

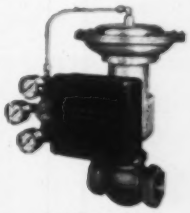
DAMPER OPERATORS: Powerful, long-stroke design allows damper to be operated directly from piston rod for accurate, positive positioning. No linkage or levers to lessen power. Spring and diaphragm fully enclosed. Powered by molded rubber diaphragms. Choice of mounting brackets. Available with or without pilot mechanisms as described above under "VALVES."

PNEUMATIC TRANSMISSION: Johnson pneumatic transmission systems provide a simplified means of centralized indication and control for air conditioning, heating, and ventilating systems. Johnson offers a complete line of pneumatic transmission and control center instrumentation, including room transmitters, remote bulb transmitters, indicators, receiver-controllers, recorders, related apparatus, and custom-designed control centers.

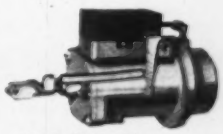
OTHER EQUIPMENT: In addition, Johnson offers a wide choice of related equipment, including static and differential pressure regulators, pneumatic switches, liquid level regulators (float type), pneumatic step controllers, relays, recording and indicating controllers, aspirating cabinets, thermometers, and gages.

T-800 Capillary Thermostat

T-901 Capillary Submaster Thermostat



V-530 Precision Pilot Positioner



D-251 Piston Damper Operator with D-265 Pilot Positioner

JOHNSON SERVICE COMPANY • Milwaukee 1, Wisconsin

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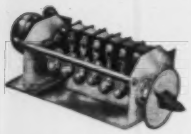
CIRCLE 134 ON READER-SERVICE CARD

Zenith AUTOMATIC CONTROL EQUIPMENT

. . . accurate . . . dependable . . .

EASY TO ADJUST

ZENITH MULTI-CIRCUIT CYCLE TIMERS



Specially designed to accurately time any electrical operation. Set for on and off periods with as many circuits as desired. Operation: Cam-driven S.P.-D.T. micro-switch bank with synchronous motor. Also furnished without motor for elevator control, limit switch, etc.

ZENITH AUTOMATIC TRANSFER SWITCHES

Automatic transfer to emergency source in 1/25th second . . . automatic return to normal voltage when restored. Supplied ac. or dc. Capacities up to 600 amps.

ZENITH INTERVAL TIMERS— MANUALLY PRE-SET

No clock springs to wind or break . . . powerful, self-starting, slow-speed, synchronous motor insures dependable operation. Timing ranges from 1 minute to 120 hours. 115 and 230 volt models. Explosion proof case shown meets National Electrical Code for Class 1, Group D., Hazardous Locations. Capacity: 1000 watts.

ZENITH RESET TIMERS— AUTOMATIC, REMOTE CONTROL

Easily pre-set, automatically reset. Synchronous motor opens and closes circuits as pre-set. May be used as timer in conjunction with standard start-stop push button station. Choice of mountings. Capacity: 1000 watts.

ZENITH PROCESS TIMER— with new PERCENTAGE CALIBRATION

For Hold Fire Control, Mixing Machinery, Testing, Equipment, Fans, Heaters, etc. Wide variety of models for all types of adjustable automatic cycle timing. Total time cycle from 15 seconds to 24 hours, with range of adjustability to 94% for ON or OFF periods.

ZENITH AUTOMATIC CONTROL EQUIPMENT

Transfer Switches, Remote Control Switches, Automatic Time Switches, Automatic Reset Switches, Magnetic Contactors, Interval Timers, Process Timers, Program Clocks, Reversing Starters, Impulse Timers. Special Automatic Control Equipment For Special Jobs.

Write for 64-Page Engineering Reference Catalog 18-B. See classified phone directory for your factory representative.

ZENITH ELECTRIC CO.

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Bergen Labs Inc
Bernco Engrg Corp
Black Sivalls & Bryson
Borg Clock Div
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Bristol Co
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Cincinnati Time Recorder
Clark Controller
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Control Equipment Corp
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Nucleat-Chicago
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Research Industrial Lab
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Seely Instrument
Spectrol Electronics
Square D Co
Standard Electric Time
Standard Instrument
Stewart-Warner Corp
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Allen-Bradley
Applied Science Corp
Automatic Timing & Contls
Autotron Inc
Beckman/Berkeley Div
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Computer Measurements
Control Equipment Corp
Corbett Science Labs
Cramer Controls Corp
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Syracuse Electronics
Systron Corp
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Performance Measurements
Racine Hydra & Machy
Sunshine Scientific
Tipptronic Inc
United Control Systems
Universal Match
Vickers Electric Prods Div
Waters Mfg Inc

TOTALIZERS, Demand

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Disc Instruments
Fischer & Porter Co
GE Apparatus Sales Div
General Time Central Res
Landis & Gyr
Sangamo Electric Co
Sparling Equipment Div
Victor Adding Machine

TOTALIZERS, Electric Energy

Bristol Co
Computer Measurements
Fischer & Porter Co
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Widely used for DC timing in industrial and military applications.

- Amazing accuracy of speed over wide voltage and load fluctuations through magnetic reed control.
- New, improved lightweight, rigid construction, precision motor.
- High torque — up to 150 inch ounces at 1 RPM — produced with low current drain.
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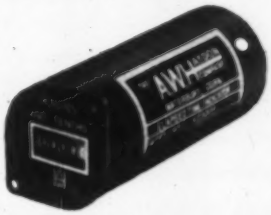
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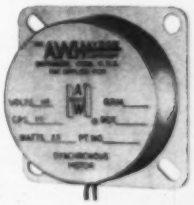
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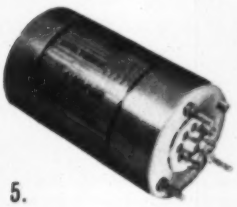
1 REPEAT CYCLE TIMER, SUB-MINIATURE, HERMETICALLY SEALED. 1/4 THE SIZE OF STANDARD UNITS, 1/2 THE WEIGHT. UP TO 8 SWITCHES. DC OR 400 CYCLE. BULLETIN RC-301. 2 ELAPSED TIME INDICATOR, SUB-MINIATURE, HERMETICALLY SEALED. ACCURACY ±0.1% AT RATED FREQUENCY. MAXIMUM WEIGHT 4-3/4 OUNCES. BULLETIN ET-602. 3 TIMING MOTORS, SYNCHRONOUS. 60 CYCLE. 30 OUNCE—INCHES RUNNING TORQUE AT 1 RPM. WEIGHT 5 OUNCES. BULLETIN MO-806. 4 DC TIMING MOTORS. WIDE RANGE OF VOLTAGES. ALSO AVAILABLE IN LOW CURRENT AND ROTARY ACTUATOR MODELS. BULLETIN MO-805.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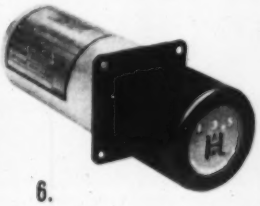
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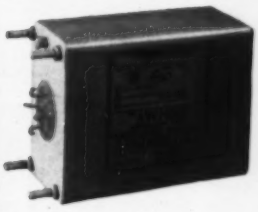
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5 TIME DELAY RELAY, MINIATURE, HERMETICALLY SEALED. PERIODS FROM 2 SECONDS TO 3 HOURS. UP TO 5 SWITCHES. BULLETIN TD-400. 6 TIME DELAY RELAY, SPECIAL. DELAYS FROM 0.2 TO 30 SECONDS IN 0.1 SECOND INCREMENTS. WEIGHT 28 OZS., DIAMETER OF CASE 2.25". BULLETIN TD-501. 7 DELAYED RESET TIME DELAY RELAY, HERMETICALLY SEALED. RESET TIMES FROM 5 SECONDS TO 10 MINUTES. TIME DELAYS FROM 5 SECONDS TO 60 MINUTES. BULLETIN TD-402. 8 DC STOP CLOCK. ACCURACY ± 20 MILLISECONDS AT 25V ± 20% VARIATION. AC MODELS ALSO AVAILABLE. BULLETIN ET-703.

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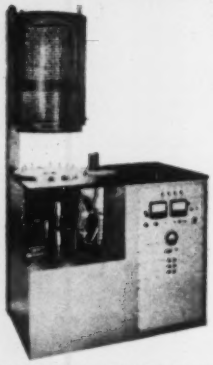
V.I.C. ... vacuum instrument corporation



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Type CS-4

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- . . . Unique Processing Port—with Two system connecting flanges
- . . . Quick Acting, Fully Valved, & Flanged System
- . . . New "Baffle-Trap"—Longer Lasting—More Efficient
- . . . New High Speed Diffusion Pump—620 Litters/Sec.
- . . . Choice of Vacuum Gauges (Reading as Low as 2 x 10⁻⁹mm HG)—Cold Cathode Discharge Gauge or Bayard-Alpert Type Ionization Gauge—Each with two TC gauges.

Send for Free Cat. on complete line of High Vacuum & Leak Detection Equipment.

Vacuum Instrument Corporation
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HAGAN POWER POSITIONERS

Accurate and completely reliable, the Hagan Power Positioner has plenty of power for the exact positioning of dampers, valves and other mechanisms.

Movement of piston is normally linear with signal pressure, but any desired relationship may be obtained by shaping the cam of the integral feedback mechanism. The Hagan Power Positioner is air operated, and uses full 80-120 psig power air.

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Barber-Colman
Bristol Co
Central Electronic Mfgrs
Central Scientific
Consol Electrodynamics
Consolidated Vacuum
Daystrom/Weston
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General Controls
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Hastings-Raydist
High Vacuum Equip
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Martin & Co H S
M-H Brown Instru Div
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Process & Instruments
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Smith Inc Arthur F
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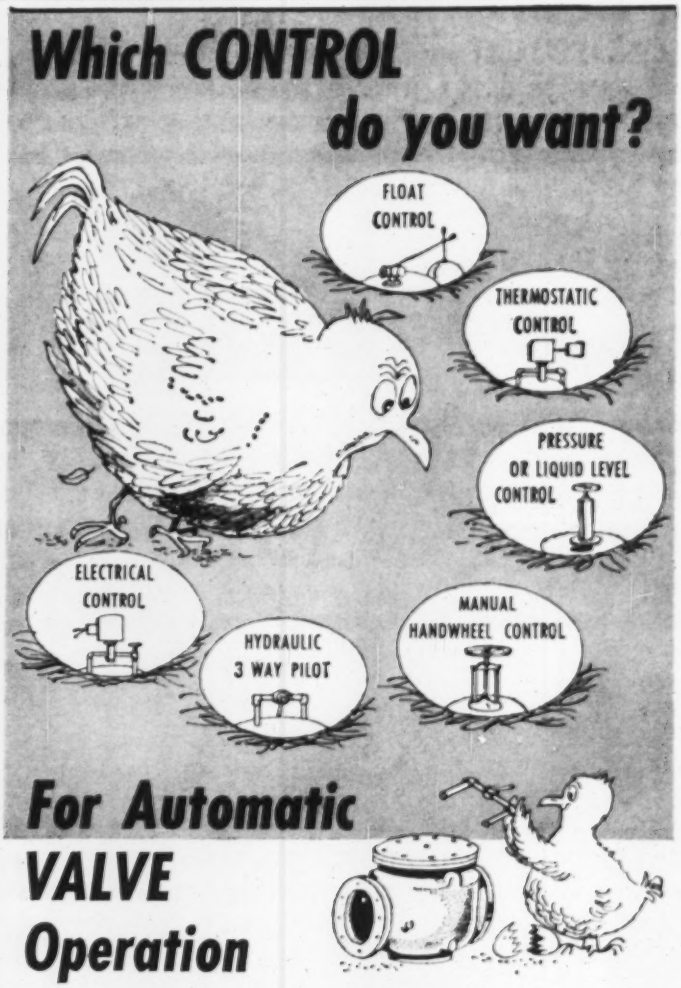

Designed to automatically operate with *any* control, G-A cushioned valves are available in sizes 2" thru 30" for special fluid control applications. You should have our complete catalog on file—write today.

GOLDEN ANDERSON *Valve Specialty Company*
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Cash Valve Mfg
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Consol Electrodynamics
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Crosby-Ashton
Daystrom/Weston
Dickson Co
Ellison Draft Gage
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Allis-Chalmers
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General Controls
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Hammel-Dahl
High Pressure Equip
Hydel Inc
Johnson Service Co
Jordan Controls
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M-H Valve Div
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Pneu-Hydro Valve
Rockwell Mfg Co
Rockwood Sprinkler
Schade Valve Mfg Co
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Denison Engrg Div
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General Regulator
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Hagan Chem & Controls
High Pressure Equip
Hunt Valve Co
Hydra-Power Corp
Keckley Co C
Kieley & Mueller
Ledeen Inc
Manning Maxwell & Moore
Mason-Neilan
Midwestern Instrs
M-H Industrial Controls
M-H Valve Div
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Pantex Valve Actuators
Parker Aircraft Co
Parks-Cramer Co
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Pic Automation Ctls
Pneu-Hydro Valve
RKL Controls
Racine Hydra & Machy
Research Controls
Rivett Lathe & Grinder
Rockwell Mfg Co
Schade Valve Mfg Co
Schrader's Son Div
Security Valve Co
Stratos Div
Taylor Instrument
True-Flo Valve
United Aircraft Prods
United Control Systems
Vickers—A & E Center
Vinson Engrg & Sales
Westinghouse Air Brake
Weston Hydraulics Ltd

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Arkwin Industries Inc
Associated Valve Co
Atwood & Morrill Co
Automatic Switch Co
Automatic Valve Co
Bailey Meter Co
Barworth Inc
Bellows-Valvair
Bendix Utica Div
B-I-F Industries
Black Sivalls & Bryson
Bobrick Aero Missile
Bristol Co
California Controls
Cash Co A W
Cash Valve Mfg
Conoflow
Consolidated Vacuum
Dahl Co Geo W
DeZurik Corp
Dole Valve Co
Edward Valves Inc
Ferguson Hille
Fisher Governor
Foster Engineering Div
Foxboro Company
Fulton Sylphon Div
General Controls
General Regulator
GPE Controls
Grinnell Co
Grove Valve & Regulator
Hagan Chem & Controls
Hammel-Dahl
Hankison Corp
Haveg Industries
High Pressure Equip
Humphrey Products Div
Hunt Valve Co
Hydra-Power Corp
Johnson Service Co
Keckley Co O C
Kieley & Mueller
Ledeen Inc
Leslie Co
Leo Engrg Co
Loe Engrg Co
Marotta Valve
Mason Neilan
M-H Industrial Controls
M-H Valve Div
Model Engrg
Modernair Corp
Moore Products Co
North American Mfg
Pantex Valve Actuators
Parker Aircraft Co
Parks-Cramer Co
Partlow Corp
PIC Automation Ctls
Pneu-Hydro Valve
Powers Regulator
Propulsion Dev Labs
RKL Controls
Research Controls
Rivett Lathe & Grinder
Rockwell Mfg Co
Ross Operating Valve
Schade Valve Mfg Co
Schrader's Son Div
Scott Aviation Corp
Security Valve Co
Seely Instrument
Stratos Div
Swartwout Div
Taylor Instrument
True-Flo Valve
United Aircraft Prods
United Control Systems
Westinghouse Air Brake
Weston Hydraulics Ltd

VALVE OPERATING DEVICES, Solenoid

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Airmatic Valve Inc
Allair Inc
Amer Meas & Control
Arkwin Industries Inc
Astromics Div
Atkomatic Valve
Automatic Switch Co
Automatic Timing & Contls
Automatic Valve Co
B-I-F Industries
Bellows-Valvair
Bendix Utica Div
Bobrick Aero Missile
Carruthers & Fernandez
Conoflow
Consolidated Vacuum
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Foxboro Company
General Controls
GE Gen Purpose Contr Dept
General Regulator
Great Lakes Mfg
Grove Valve & Regulator
Hamilton Standard Div
Hammel-Dahl
Haveg Industries
Hoke Inc
Hoover Electric Co
Humphrey Products Div
Hunt Valve Co
Hydra-Power Corp
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Koontz-Wagner Elec
Marotta Valve
McDonnell & Miller
Midwestern Instrs
M-H Industrial Controls
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Pantex Valve Actuators
Parker Aircraft Co
Pegasus Labs
Pneu-Hydro Valve
Propulsion Dev Labs
Rivett Lathe & Grinder
Ross Operating Valve
Schrader's Son Div
Scott Aviation Corp
Security Valve Co
Skinner Elec Valve
United Aircraft Prods
United Control Systems
Valcor Engrg Corp
Vickers—A & E Center
Weston Hydraulics Ltd

VALVE POSITIONERS

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Barber-Colman
Black Sivalls & Bryson
B-I-F Industries
Bristol Co
Cash Co A W
Conoflow
Consol Controls
Detroit Controls
Electric Regulator
Ferguson Hille
Fisher Governor
Foxboro Company
Fulton Sylphon Div
General Controls
General Regulator
GPE Controls
Grinnell Co
Hagan Chem & Controls
Hammel-Dahl
Haveg Industries
High Pressure Equip
Hoover Electric Co
Hydra-Power Corp
Hydromatics Inc
Johnson Service Co
Jordan Controls
Kieley & Mueller
Leeds & Northrup
Manning Maxwell & Moore
Mason Neilan
Model Engrg
Moore Products Co
Pantex Valve Actuators
Parker Aircraft Co
Pegasus Labs
Pneu-Hydro Valve
Powers Regulator
Redford Corp
Reliance Instr Mfg
Republic Flow Meters
Rivett Lathe & Grinder
Rockwell Mfg Co
Security Valve Co
Syracuse Electronics
Tejax Engrg Corp
Taylor Instrument
United Aircraft Prods
United Control Systems
U S Gauge Div
Westinghouse Air Brake
Weston Hydraulics Ltd
Wheelco Instruments Div

VALVES, Ball

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Consolidated Vacuum
Coors Porcelain
Futurecraft Corp
General Kinetics
Hydra-Power Corp
Hydromatics Inc
Jamesburg Corp
Parker Aircraft Co
Rockwell Mfg Co
Rockwood Sprinkler
Simmonds Precision Prods
True-Flo Valve
Vickery Co
Weston Hydraulics Ltd
Worcester Valve Co Inc

VALVES, Butterfly

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Airesearch Mfg Co
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Black Sivalls & Bryson
Bobrick Aero Missile
Conoflow
Davis Regulator
Dole Valve Co
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Futurecraft Corp
General Controls Co
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Hamilton Standard Div
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Johnson Service Co
Mason-Neilan
M-H Industrial Controls
North American Mfg
Parker Aircraft Co
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Vinson Engrg & Sales

VALVES, CONTROL

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Airmatic Valve Inc
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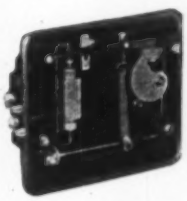

BAILEY POSITIONING RELAY

• Accurately positions a control valve or drive to the control requirements as received pneumatically from the control station. Also included is a cam adjustment for tuning valve or drive characteristics to system characteristics. This unit is ideally suited for control of flow characteristics of regulating devices.

Standard SAMA signal ranges of 3-15 psig or 3-27 psig.

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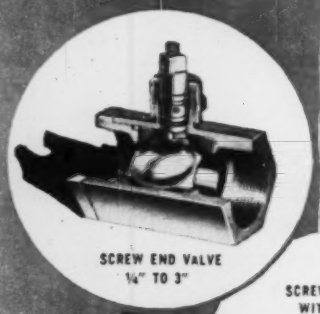
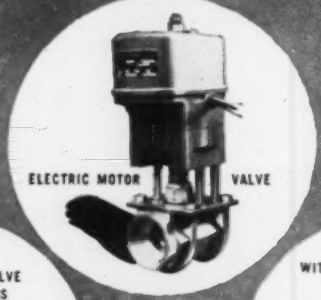
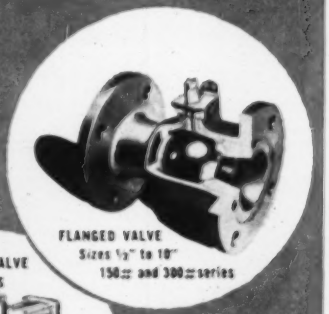
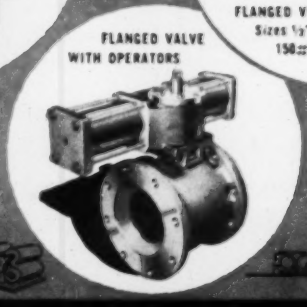
jamesbury "Double-Seal"™ BALL VALVES*









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Throughout industry, wherever you look, you'll find the versatility of the Jamesbury Ball Valve doing a more efficient, more economical job.

In chemicals, paper, rubber, petroleum, aircraft, and missiles, Jamesbury Ball Valves handle a wider range of liquids and gases than any other valve design.

Pioneers and Still The Leaders!

Jamesbury pioneered the "Double-Seal" Ball Valve construction and leads the way today with the latest in ball valve design and applications.

Greatest Range of Sizes and Materials Available

Jamesbury "Double-Seal" Ball Valves are available in 303 and 316 Stainless Steel, Alloy 20, Carbon Steel, Bronze, Ductile Iron, Aluminum and PVC.

Interchangeable seats and seals are available in "Teflon", Nylon, Buna-N, Neoprene, Hypalon and natural rubbers.

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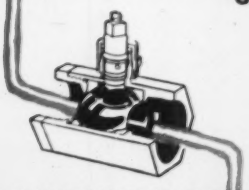

* Patented

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controls

for pressure, liquid level, temperature and flow

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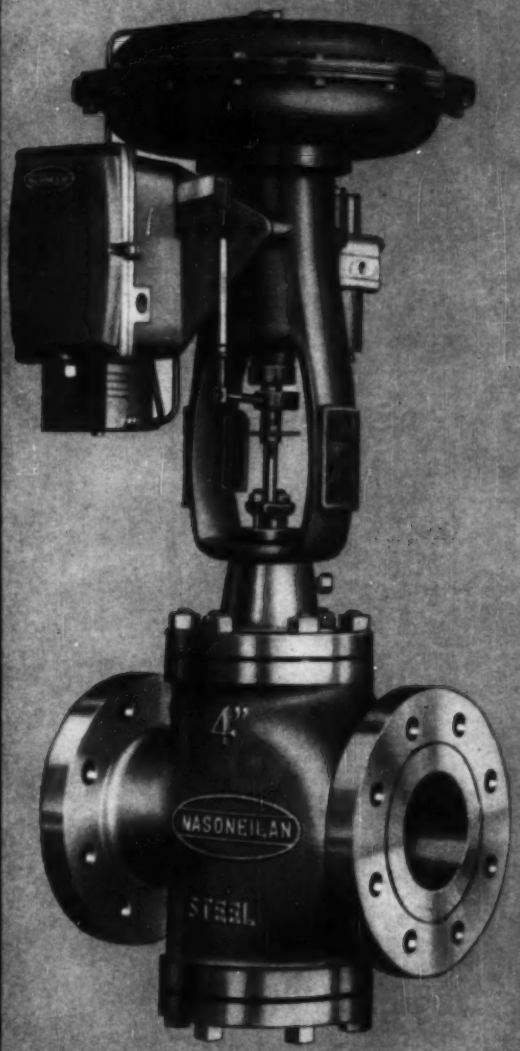
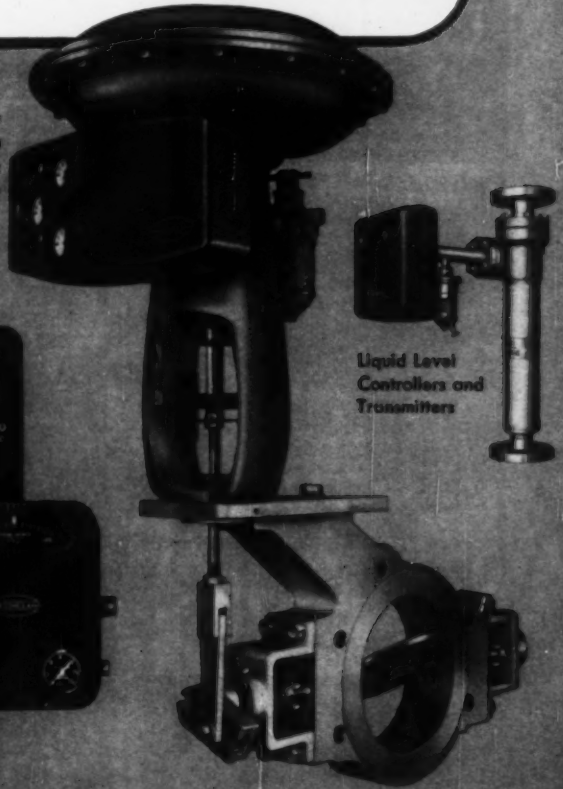
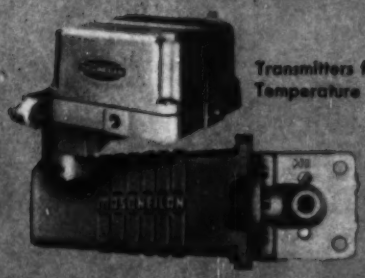


Control Valves shown with Electropneumatic Positioner

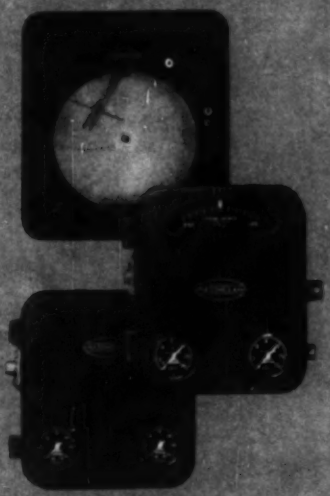
Butterfly Valve shown with Spring-diaphragm Actuator and Pneumatic Positioner



Liquid Level Controllers and Transmitters



Transmitters for Pressure, Temperature or Flow



Pneumatic Control Instruments

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YEARS AHEAD IN DESIGN . . .

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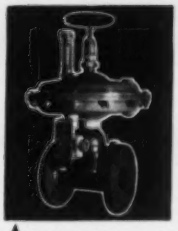
← SERIES LB CONTROL VALVES

- Integrated body-actuator design outmodes conventional valves.
- Cono-J Positioner sets new standard for precise proportional positioning.
- Extra-thick body walls give added protection against corrosion and erosion.



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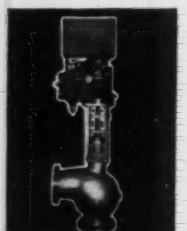
In all sizes for on-off and throttling control.



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SERIES AB → CONTROL VALVES

For economical handling of small flows.

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VALVES FOR . . .

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- Remote Control
- Corrosive Fluids
- Hydraulic Systems
- Pneumatic Systems

WIDE RANGE OF SPECS . . .

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- −320°F to +1200°F
- ⅛" thru 1" in NPT & AND-10050 Tubing Ends
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Golden Anderson
Granville-Phillips
Grove Valve & Regulator
Hagan Chem & Controls
Hammel-Dahl
Haveg Industries
Hays Mfg Co
Henry Valve Co
High Pressure Equip
Hoke Inc
Hoover Electric Co
Humphrey Products Div
Hunt Valve Co
Hydra-Power Corp
Hydromatics Inc
Imperial Brass Mfg
Industrial Engrg Corp
Inflico Inc
Instr Development Co
Instruments Inc
Johnson Service Co
Keckley Co O C
Kieley & Mueller
Klipfel Valves
Koontz-Wagner Elec
Ledeen Inc
Leonard Inc Wallace O
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Linear Controls
Mason-Neilan
Marotta Valve
McDonnell & Miller
McIlvaine O T
M-H Industrial Controls
M-H Valve Div
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Nicholson & Co W H
North American Mfg
Oilgear Co
OPW-Jordan
Parker Aircraft Co
Parks-Cramer Co
Partlow Corp
Permatit Co
Petrometer Corp
Phillips & Co H A
PIC Automation Ctls
Pneu-Hydro Valve
Powers Regulator
Propulsion Dev Labs
RKL Controls
Racine Hydra & Machy
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Reliance Instr Mfg
Rivett Lathe & Grinder
Robbins Aviation Inc
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Scott Aviation Corp
Security Valve Co
Seely Instrument
Shand and Jurs
Simmonds Aerocessories
Standard Instrument
Strahman Valves
Taylor Instrument
Texas Instruments Inc
Trerice Co H O
True-Flo Valve
Uniflow Valve
United Aircraft Prods
United Control Corp
United Control Systems
Universal Match
Valcor Engrg Corp
Vanton Pump & Eqpt Corp
Vapor Recovery Systems
Versa Products
Vickers-A & E Center
Vinson Engrg & Sales
Westinghouse Air Brake
Weston Hydraulics Ltd
Whitley Res Tool Co

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Automatic Switch Co
Bellows-Valvair
Black Sivalls & Bryson
Bristol Co
Cash Co A W
Cash Valve Mfg
Conoflow
Cornelius Co
Dahl Co Geo W
Davis Regulator
Dole Valve Co
Fischer & Porter Co
GRS Corp
Grinnell Co
Grove Valve & Regulator
Haveg Industries
Henry Valve Co
Hills-McCanna
Hoke Inc
Humphrey Products Div
Hunt Valve Co
Imperial Brass Mfg
Instruments Inc
Keckley Co O C
Kerotest Mfg Co
Kieley & Mueller
Leslie Co
Mason Neilan
M-H Valve Div
Model Engrg
Moderne Corp
Nuclear Materials & Eqpt
Parker Aircraft Co
Pneu-Hydro Valve
Porter Inc George K
Powers Regulator
Research Controls
Taylor Instrument
Uniflow Valve
United Aircraft Prods

VALVES, FLEXIBLE SLEEVE

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Fisher Governor
Grove Valve & Regulator
Haveg Industries
International Instrument
Parker Aircraft Co
Pneu-Hydro Valve
RKL Controls
Red Jacket Co
Simmonds Precision Prods
United Aircraft Prods

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Aerotec Industries
Associated Valve Co
Atlas Valve Co
Atwood & Morrill Co
Bailey Co Chas M
Barworth Inc
Black Sivalls & Bryson
Cash Co A W
Clark Mfg
Continental Equipment
Davis Regulator
Defender Instrument
Fisher Governor
Foster Engineering Div
Fulton Sylphon Div
Futurecraft Corp
General Controls
Golden Anderson
Grove Valve & Regulator
Hammel-Dahl
Haveg Industries
Hoke Inc
Instruments Inc
James Pond & Clark
Keckley Co O C
Kieley & Mueller
Klipfel Valves
Martin & Co H S
Mason Neilan
McDonnell & Miller
Model Engrg
Parker Aircraft Co
Pattigo & Co H A
Pneu-Hydro Valve
Revere Corp of Amer
Schade Valve Mfg Co
Simmonds Aerocessories
United Aircraft Prods

VALVES, Gage Cocks

Associated Valve Co
Detroit Controls
Dragon Engrg Co
Edward Valves Inc
GRS Corp
Grove Valve & Regulator
Haveg Industries
Hoke Inc
Keckley Co O C
Kunkle Valve Co
Manning Maxwell & Moore
Marsh Instr Co
Parker Aircraft Co
Republic Flow Meters
Rockwell Mfg Co
Strahman Valves
Uehling Instrument
Trerice Co H O

VALVES, High Pressure

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Aero Supply Mfg
Aerotec Industries
Allis-Chalmers
Altair Inc
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Arkwin Industries Inc
Associated Valve Co
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Atkomatic Valve
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Cash Valve Mfg
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Cornelius Co
Dahl Co Geo W
Daniel Orifice Fitting
Davies Brothers
Davis Regulator
Denison Engrg Div
Detroit Controls
Deutsch Co
Dragon Engrg Co
Edward Valves Inc
Electric Autolite
Farris Engrg Corp
Fisher Governor
Fluid Controls
Fluid Mechanisms
Foster Engineering Div
Fulton Sylphon Div
Futurecraft Corp
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Hoke Inc
Hunt Valve Co
Hydra-Power Corp
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Johnson Service Co
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Kieley & Mueller
Klipfel Valves
Koontz-Wagner Elec
Leonard Inc Wallace O
Leslie Co
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Mason-Neilan
Mercoid Corp
M-H Valve Div
Model Engrg
Nordgren Co C A
Oilgear Co
Parker Aircraft Co
Pneu-Hydro Valve
Pressure Products Indust
Racine Hydra & Machy
Republic Flow Meters
Republic Mfg Co
Research Controls
Rivett Lathe & Grinder
Robbins Aviation Inc
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Rockwood Sprinkler
Ruska Instrument Corp
Scott Aviation Corp
Security Valve Co
Seely Instrument
Simmonds Aerocessories
Simmonds Precision Prods
Stratos Div
Taylor Instrument
True-Flo Valve
Uniflow Valve
United Control Systems
Universal Match
United Aircraft Prods
Valcor Engrg Corp
Vickers-A & E Center
Victor Equipment
Vinson Engrg & Sales
Weston Hydraulics Ltd
Yarnall Waring

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Allis-Chalmers
American Meter Co
Annin Company
Arkwin Industries Inc
Associated Valve Co
Autoclave Engineers
Automatic Switch Co
Bailey Meter Co
Bastian Blessing Co
Bobrick Aero Missile
Combination Pump Valve
Consolidated Vacuum
Dahl Co Geo W
Daniel Orifice Fitting
Detroit Controls
Dragon Engrg Co
Edward Valves Inc
Fluid Controls
Fulton Sylphon Div
Futurecraft Corp
Gar Precision Parts
General Controls
Greer Hydraulics Inc
Greiner Co Emil
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Henry Valve Co
High Pressure Equip
Hoke Inc
Imperial Brass Mfg
Kerotest Mfg Co
Kieley & Mueller
Leslie Co
Manning Maxwell & Moore
Marotta Valve
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Taylor Instrument
United Aircraft Prods
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VALVES, Relief and Safety

Adel Precision Prods
Aero Supply Mfg
Aerotec Industries
Airmatic Valve Inc
Arkwin Industries Inc
Associated Valve Co
Astronics Div
Atkomatic Valve
Atwood & Morrill Co
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Automatic Switch Co
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General Controls
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Kerotest Mfg Co
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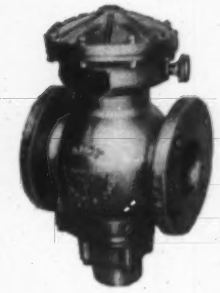

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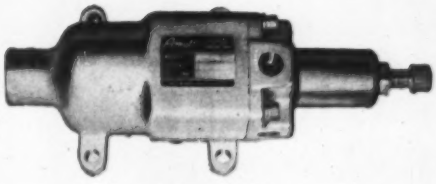
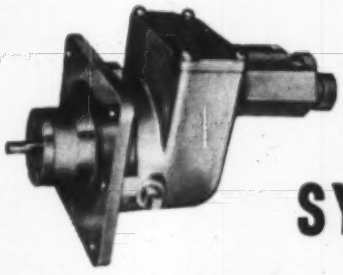
2" & 3" Pipe Size
Model 2180



Vibration Valve
3-Way Control
Model 2900

Thermostatic Valves
½" to 6" Pipe Size
MODEL B



Speed Actuated Valve
3-Way Control
Model 4017

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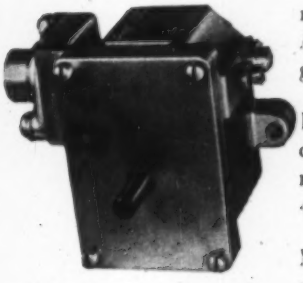
SYSTEM CONTROLS

A COMPLETE LINE

Already recognized by owners and original equipment manufacturers as the standard of quality and reliability in engine controls and thermostatic valves, AMOT is expanding its product line to provide greater flexibility in function control.

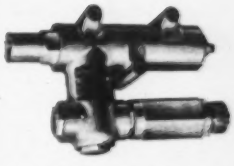
Safety Control Switch
Pressure-Temperature
Model 2340



Low Pressure Safety Control
Small Engines & Equipment
Model 2800

Illustrated on this page are some of the new products designed particularly for automatic or semi-automatic control systems. Models 2900, 4017, 4021, 4023 include 3-way balanced valves.

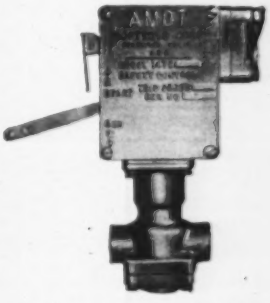
Model 2800 is a new lower priced snap-acting safety shutdown device which is sensitive to low pressure. Now smaller engines can be provided with AMOT quality protection at a price attractive to both builder and user.



High Pressure Valve
3-Way Control
Model 4023

Temperature Valve
3-Way Control
Model 4021

In addition to the products illustrated on this page, AMOT offers temperature actuated valves and switches, diaphragm operated devices, special controls to builders specifications, and the Model 2400 Indicating Relay. This mechanical indicator is widely used in control systems to show the cause of emergency shutdown or trouble, and is available with a snap switch for remote electrical shutdown indication.



Safety and Automatic Controls
Mechanical Type
Model 1476

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CIRCLE 147 ON READER-SERVICE CARD

THE NEW, TIGHT-CLOSING PRESSURE REDUCING VALVE THAT *CAN'T FOUL*

If you like a simple, straight-forward solution to vexing valve problems, you're bound to be impressed with the new line of Leslie-Topper Pressure Reducing Valves. To avoid valve fouling, Leslie Engineers developed a tight-closing valve with an internal pilot that's completely out of the path of steam—*it just can't foul.* Let imaginative engineering simplify valve design and you get results.

Here's the one pressure reducing valve that handles poor steam conditions, intermittent or standby service better than any other valve. It provides high accuracy of regulation with negligible dead-end build up and costs only pennies for maintenance.

New, patented Leslie-Spiroflex* all metal diaphragm insures years of outstanding valve performance. It makes a long valve stroke possible in a packless design—there's nothing to leak, nothing to bind. It's time for a change when you can get rid of the cost and bother of fussy, old-fashioned pressure regulators.

*Trademark of Leslie Co.

Leslie-Topper Selection Table

Size	Inlet Pressure PSI	Adjustable Pressure Range PSI	CLASS		
			Cast Iron Construction	Bronze Body Construction With Iron Superstructure Castings*	All Bronze Construction
½" TO 1¼"	UP TO 150	2 - 10	GKLL	GLL	GBLL
	OVER 125	2 - 10	GKL	GL	GBL
	UP TO MAXIMUM BODY RATING	5 - 20	GKM	GM	GBM
		15 - 35	GKH	GH	GBH
1½" TO 2"		2 - 10	GKL	GL	GBL
		5 - 20	GKM	GM	GBM
	UP TO 150	5 - 35	GKHL	GHL	GBHL

*All parts in contact with controlled fluid are of bronze.

For sizing and capacity data write for Bulletin 582 or contact your Leslie Engineer—he's listed in the Yellow Pages under 'Valves' or 'Regulators'.

Leslie Co., 704 Grant Ave., Lyndhurst, New Jersey

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This new Leslie Topper Pressure Reducing valve is a part of Leslie's expanding line of control valves, regulators and pilots for steam, air and liquids.

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5	25	45	65	85	105	125	145	165	185	205	225	245	265	285	305	325	345	365	385
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11	31	51	71	91	111	131	151	171	191	211	231	251	271	291	311	331	351	371	391
12	32	52	72	92	112	132	152	172	192	212	232	252	272	292	312	332	352	372	392
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14	34	54	74	94	114	134	154	174	194	214	234	254	274	294	314	334	354	374	394
15	35	55	75	95	115	135	155	175	195	215	235	255	275	295	315	335	355	375	395
16	36	56	76	96	116	136	156	176	196	216	236	256	276	296	316	336	356	376	396
17	37	57	77	97	117	137	157	177	197	217	237	257	277	297	317	337	357	377	397
18	38	58	78	98	118	138	158	178	198	218	238	258	278	298	318	338	358	378	398
19	39	59	79	99	119	139	159	179	199	219	239	259	279	299	319	339	359	379	
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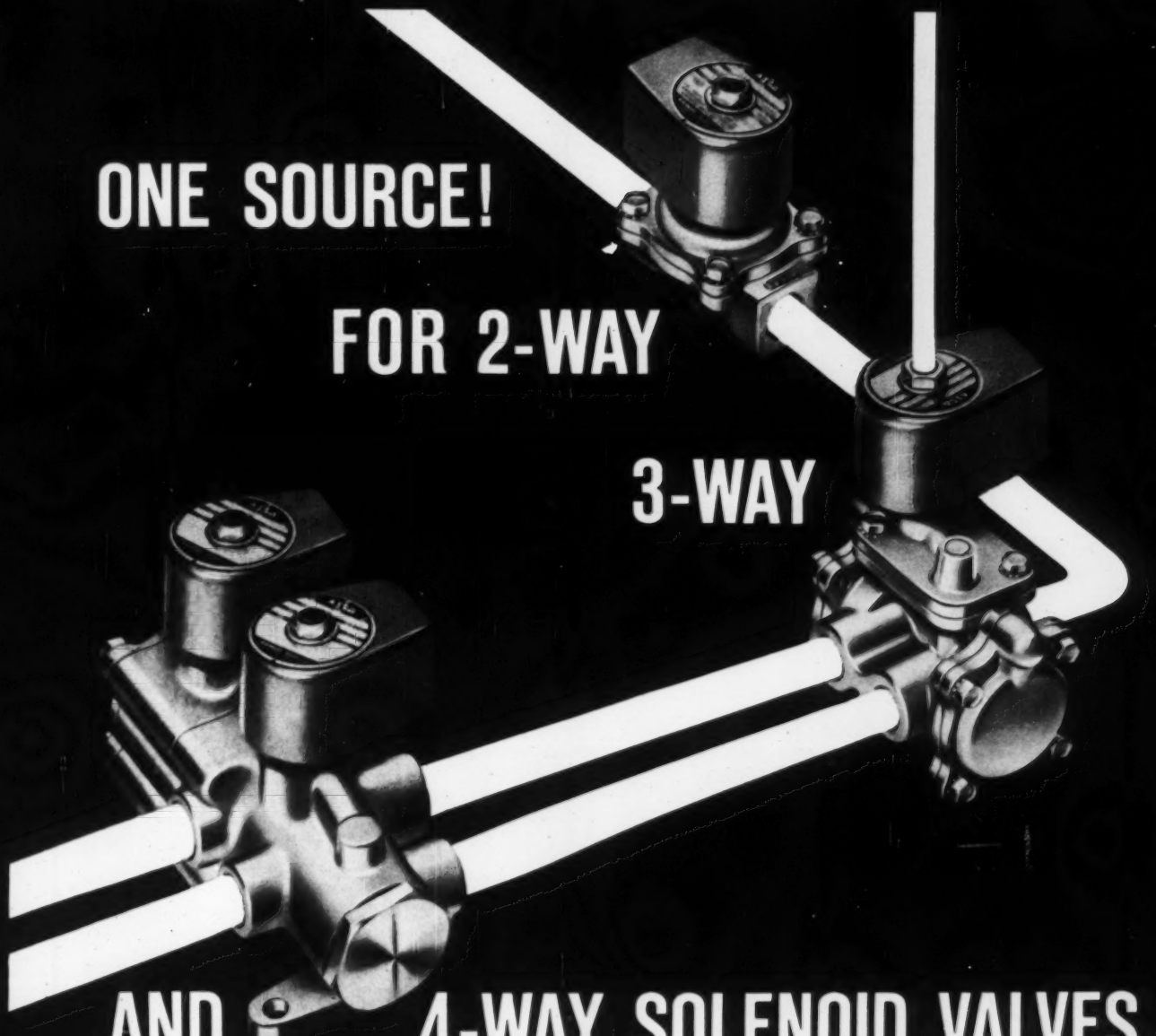

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When you discuss solenoid valve requirements with an ASCO engineer, you benefit from the design and development experience of half a century. The ASCO specialist can recommend the right valve for your needs because ASCO pioneering has brought about the thousands of types of solenoid valves now available:

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And ASCO can supply you with standard, explosion-proof or water tight enclosures—Class A and Class H coils—a wide range of body materials including cast iron, brass, bronze and stainless steel. Or trade on ASCO experience and have one of our engineers call.

New! Catalog No. 202 covers the ASCO line of Solenoid Valves. Write for your copy today.

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World's largest stock of Solenoid Valves. A complete Solenoid Valve Stock List will be sent to you with your copy of Catalog No. 202.

Whatever the crucial factor in your flow control applications—reliability, compactness, high cycling rate—there is an ASCO valve that meets your need.

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Complete systems from 175 to 5000 pounds force, automatic control, minimum distortion or lateral motion. Systems for 100 g. testing; Environmental chambers; or explosive atmosphere; and limited Random testing with minimum accessories.

Dial-A-Gain Sensitivity Standardizer and Cathode Follower for Accelerometer Readout Dial accelerometer sensitivity and get 1 volt per g. Also available with meter, Driven Shield Cable, Velocity and Displacement outputs.

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Barworth Inc
Bendix Utica Div
Bobrick Aero Missile
Carruthers & Fernandez
Clark Controller
Clark-Cooper
Controls Co of Amer
Davis Regulator
Denison Engrg Div
Detroit Controls
Dole Valve Co
Eclipse Fuel Engrg
Electric Autolite
Farris Engrg Corp
Fluid Mechanisms
Futurecraft Corp
GRS Corp
General Controls
Golden Anderson
Gould Company
Great Lakes Mfg
Grove Valve & Regulator
Hamilton Standard Div
Haveg Industries
Hays Mfg Co
Hoke Inc
Hoover Electric Co
Humphrey Products Div
Hunt Valve Co
Hydra-Power Corp
Johnson Corp
Keckley Co O C
Koontz-Wagner Elec
Leonard Inc Wallace O
Marotta Valve
Marsh Instr Co
Mercoid Corp
Midwestern Instrs
Hammel-Dahl/Foster Engrg
M-H Industrial Controls
Model Engrg
Modernair Corp
Norgren Co C A
OPW Jordan
Oilgear Co
Norwood Controls
Parker Aircraft Co
Pegasus Labs
PIC Automation Ctls
Pneu-Hydro Valve
Propulsion Dev Labs
RKL Controls
Racine Hydra & Machy
Rivett Lathe & Grinder
Rost Operating Valve
Schrader's Son Div
Scott Aviation Corp
Simmonds Aerocessories
Skinner Elec Valve
Sta Warm Electric
Trerice Co H O
United Aircraft Prods
Valcor Engrg Corp
Veeco Vacuum
Versa Products
Vickers-A & E Center
Vinson Engrg & Sales
Westinghouse Air Brake
Weston Hydraulics Ltd

VALVES, Vacuum

Aerotec Industries
Airmatic Valve Inc
Associated Valve Co
Atkomatic Valve
Atwood & Morrill Co
Automatic Switch Co
Bailey Co Chas M
Barworth Inc
Cash Co A W
Central Scientific
Circle Seal Products
Conoflow
Consol Electrodynamics
Consolidated Vacuum
Cornelius Co
Davis Regulator
Dragon Engrg Co
Fluid Mechanisms
Foster Engineering Div
Futurecraft Corp
General Controls Co
Grinnell Co
Great Lakes Mfg
High Vacuum Equip
Hoke Inc
Humphrey Products Div
Hunt Valve Co
Hydrodynamics Inc
Imperial Brass Mfg
James Pond & Clark
Kerotest Mfg Co
Kinney Vacuum Div
Mainstat Corp
Martin & Co H S
NRC Equipment
Parker Aircraft Co
Pneu-Hydro Valve
Propulsion Dev Labs
Red Point Corp
Research Controls
Robbins Aviation Inc
Ross Operating Valve
Shand and Jurs
Vacuum Instrument
Vacuum Research Co
Versa Products
Vinson Engrg & Sales
Welch Mfg Co W M
Weston Hydraulics Ltd

VENTURI TUBES

Advanced Dynamics
Automation Devices Inc
B-I-F Industries
Bailey Meter Co
Bristol Co
Fluidynamics
Foxboro Company
General Controls
Permutit Co
Porter Inc Geo K
Propulsion Dev Labs
Republic Flow Meters
Robinson Orifice
Scott Aviation Corp
Simplex Valve & Meter

VIBRATION INSTRUMENTS, Indicators and/or Recorders

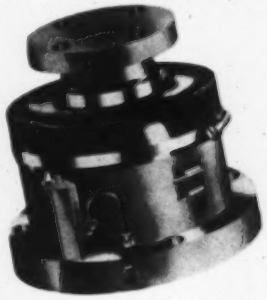
Advanced Instr Corp
Aeronaut & Instr Div
Automatic Timing & Contls
BJ Electronics
B and K Instruments
Bently Scientific
Chadwick-Helmuth
Columbia Research Labs
Consol Electrodynamics
Convair Instruments
Ehrts Equipment
Epic Inc
Erwood Inc
Federal Shock Mount
Flow Corporation
Gaertner Scientific
GE Apparatus Sales Div
General Radio
Geotechnical Corp
Hamilton Standard Div
Impact-O-Graph Corp
Inertia Switch Inc
International Res & Dev
Kahn & Co
Kay Electric Co
Korfund Co
Land-Air Inc
Ling Electronics
MB Electronics
Massa Div
Muirhead Instrs
Panoramic Radio Prods
Probescope Co
Scott Inc H H
Southwestern Indus Elx
Spreengnether Instr
Tel-Instrument Elx
Testing Machines Inc
Unholtz-Dickie
Westinghouse Electric

VIBRATION PICKUPS

Aeronaut & Instr Div
Automatic Timing & Contls
B & F Instruments
BJ Electronics
B and K Instruments
Bently Scientific
Chesapeake Instr
Columbia Research Labs
Consol Electrodynamics
Dumont Labs Allen B
Electro Products Labs
Endevco Corp
Erwood Inc
Federal Shock Mount
General Radio
Geotechnical Corp
International Res & Dev

EMERY Engineered WEIGHING SYSTEMS

Insure— MAXIMUM ACCURACY IN LOAD AND FORCE MEASUREMENT



Wherever extreme accuracy and long, maintenance-free service life are factors in weighing and force measurement systems, industry calls on Emery Hydraulic Load Cells. These versatile weighing units can be teamed with practically any type of instrumentation to provide accurate weight or force indication, recording, printing or various control functions.

Emery Hydraulic Load Cells are being used by aircraft companies to measure jet engine and propeller thrust; in the automotive field for dynamometer applications; in the metal-working industry to measure forces in the dies of wire drawing or metal forming equipment; and in the processing industries to weigh tanks and portable cars used in blending operations.

THE EMERY PRODUCT LINE INCLUDES:

- **Bourdon Gauges**
- **Dynamometer Scales**
- **Hydraulic Load Cells (Tension and Compression)**
- **Hydraulic Scales**
- **Pneumatic Load Cells (Tension and Compression)**
- **Special Weighing Apparatus**

If you have a problem in weighing or force measurement, tell us about it in detail, we will gladly make a recommendation without obligation.

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Korfund Co
Land-Air Inc
MB Electronics
Micrometrical Mfg
Schaevitz Engineering
Shure Brothers
Southwestern Indus Elx
Statham Instruments

VIBRATION & SHOCK TEST EQUIPMENT, including Shake Tables

All Amer Tool & Mfg
Applied Science Corp
Associated Testing Labs
Avco Corp
Baldwin-Lima-Hamilton
Chadwick-Helmuth
Columbia Research Labs
Consol Electrodynamics
Consolidated Systems
Consolidated Vacuum
Convair Instruments
Gaynes Engineering
Geotechnical Corp
International Res & Dev
Jan Hardware Mfg
Kay Electric Co
L A B Corp
Ling Electronics
MB Electronics
Mast Development
Miller Co L C
Muirhead Instrs
Pegasus Labs
Power-Tronic Systems
Scott Inc H H
Testing Machines Inc
Tuboliz-Dickie
United Aircraft Prods
Universal Match
Wyle Mfg Corp

VIBROGRAPHS

Convair Instruments
Epic Inc
Erwood Inc
Federal Shock Mount
Geotechnical Corp
Korfund Co
Sprengnether Instr

VIBROMETERS

Convair Instruments
Epic Inc
Erwood Inc
Federal Shock Mount
GE Apparatus Sales Div
Geotechnical Corp
International Res & Dev
Korfund Co
Sunshine Scientific

VIBROSCOPES

Bush Associates G F
Convair Instruments
Epic Inc
Federal Shock Mount
Inscp Company
International Res & Dev

VISCOSITY CONTROLLERS, including Consistency

Acme Industrial Co
Automation Products
Bendix Cincinnati Div
Brabender Instr C W
Brookfield Engrg Labs
Fischer & Porter Co
Foxboro Company
Hallikainen Instrs
Kinemotive Corp
Norcross Corp
Polarad Electronics Corp
Potter Aeronautical
Sunshine Scientific

WASTE TREATMENT INSTRUMENTS

B-I-F Industries
Bailey Meter Co
Beckman/Sci & Proc Div
Brailsford & Co
Bristol Co
Fischer & Porter Co
Foxboro Company
Hagan Chem & Controls
Infilco Inc
Kruger Instrs Harold
Leeds & Northrup
M-H Brown Instrs Div
Phoenix Precision Instr
Scientific Instrument
Simplex Valve & Meter
Wallace & Tiernan

WATCH RATE TESTERS

Daystrom Mil Elx
Waltham Precision Instr

WATCHES, Chronometer, including Marine (see also Clocks)

Bulova Research
Ducommun Co M
Greiner Co Emil
Hamilton Watch
Lafayette Instr
Micronics Div
Waltham Precision Instr

WATCHES, Stop

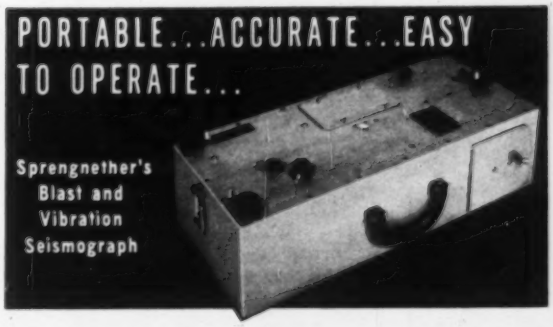
Ducommun Co M
Greiner Co Emil
Hamilton Watch
Martindale Electric
Pacific Transducer Corp
Racine & Co Inc Jules
Scientific Industries
Soiltest Inc
Stucki Co Hetman
Waltham Precision Instr
Welch Mfg Co W M
Zernickow Co O

WEIGHING SCALES

American Data Div
American Electronics Inc
Automatic Scale Co
Baldwin-Lima-Hamilton
B-I-F Industries
Byrtex Corp
Chatillon John
CompuDyne Corp
Dillon & Co W C
Detecto Scales
Emery Co A H
Exact Weight Scale
Fisher Scientific
Gilmore Industries
Greiner Co Emil
Howe Scale Co
Hydroway Scales
Mettler Instrument
Nuclear Materials & Eqpt
Ohaus Scale Corp
Performance Measurements
Revere Corp of Amer
Richardson Scale Co
Soiltest Inc
Stoelting Co C H
Streeter Amet
Taller Cooper Div
Telechrome Mfg Corp
Thayer Scale Corp
Toledo Scale Div
Triner Scale & Mfg
Wallace & Tiernan
Weighing & Controls
Welch Mfg Co W M
Westronics Inc

WEIGHT CONTROLLERS, Indicating, Recording

Automatic Timing & Contls
B-I-F Industries
Baldwin-Lima-Hamilton
Barber-Colman
Bently Scientific
Byrtex Corp
CompuDyne Corp
Daytronic Corp
Detecto Scales
Dynametrics Corp
Exact Weight Scale
Gilmore Industries
Howe Scale Co
Kieley & Mueller
Leeds & Northrup
Monroe Components Div
Nuclear Materials & Equip
Princeton Div
Richardson Scale Co
Schlumberger Corp
Streeter Amet
Taller Cooper Div
Toledo Scale Div
Wallace & Tiernan
Westronics Inc
Weighing & Controls



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Typical Applications:

- **Explosive Testing**
- **Measuring Vibration Effects to Plant and Equipment from Operating Heavy Machinery.**
- **Rocket Engine Testing**
- **Determine Vibration Response of Members During Construction and After Completion of Building.**

Portability: (38 lbs.—25 x 10 x 8 in.) Unit is self contained and free from external power source.

Extremely Accurate: To guard against error, each instrument is tested and calibration data furnished. Frequency response, 3 to 200 cycles per second. Timing lines are across record at intervals of 0.03 seconds with accuracy of 0.1%.

Easy To Operate: All controls are easily accessible. Instrument can be set up, leveled and made ready to operate within minutes.

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CIRCLE 152 ON READER-SERVICE CARD

Mettler BALANCES FOR AUTOMATED PRODUCTION:

TYPE DWA — Automatic Filling Balances for Packaging, Batching, Flow Control

TYPE KWA. — Automatic Check-weighing and Sorting Balances for Check-weighing, Sorting, Statistical Tabulation, Machine Control

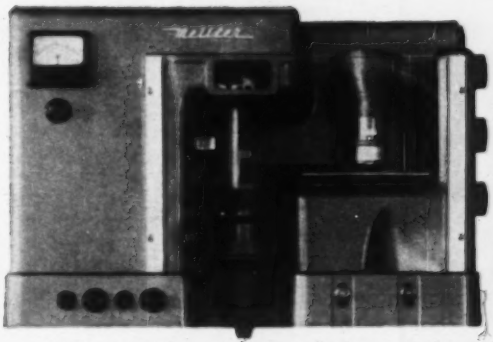
FEATURES:

ACCURATE • Accuracies of up to ±5 mg for control of fine weights

AUTOMATIC • Complete connections built into each unit for co-ordination with transport systems and recording devices

RELIABLE • Plug-in unitized electronic components, printed circuits for longest trouble-free life

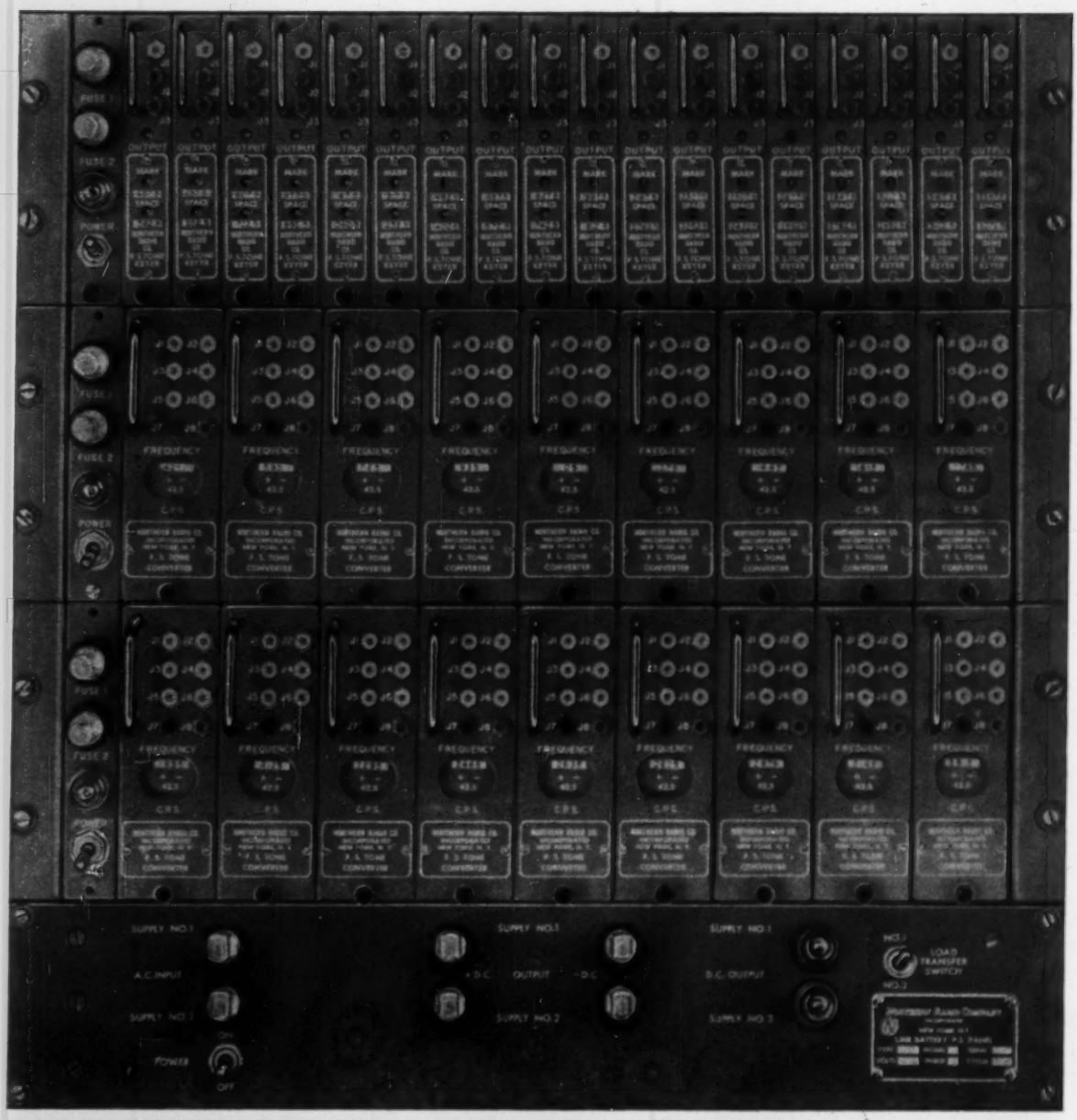
Write today for complete literature on automated high-precision weighing



METTLER INSTRUMENT CORPORATION

HIGHTSTOWN, NEW JERSEY

CIRCLE 153 ON READER-SERVICE CARD



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1950 Bank St., Billings Bridge, Ottawa, Ontario

CIRCLE 154 ON READER-SERVICE CARD

Data Handling and Recording

1961 BUYERS' GUIDE

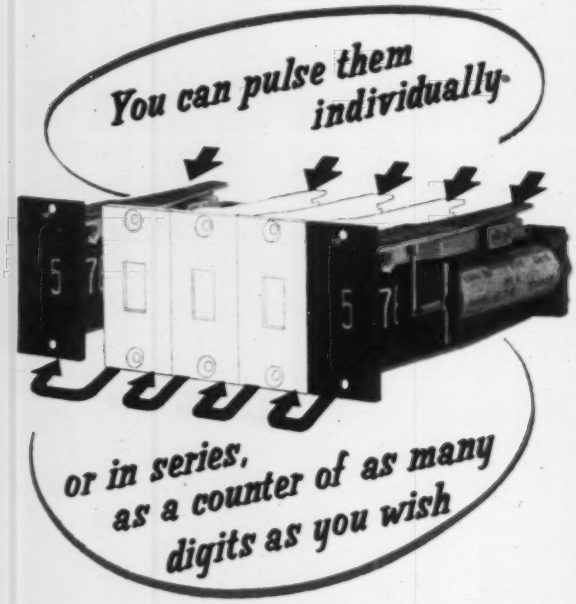
2

ANALOG AND DIGITAL COMPUTERS
AND AUXILIARY EQUIPMENT FOR DATA
HANDLING AND TRANSMISSION—AND
RECORDING INSTRUMENTATION

It's the

built-in contacts *that make these* SODECO

Digital Elements so versatile



You can:
- Preset any figure remotely, by push button, by dial, or from punched cards
- Reset to zero electrically
- Or count down, get a signal at zero, recycle, or preset to a new figure in less than half a second per digit
- Specify them for addition or for subtraction
- Transmit numbers to remote locations

Ask for descriptive bulletin and wiring diagrams for these and other applications

SODECO 1TD ten or twenty-five impulse/sec. counters are compact (⅞" x 1¾" x 4⅜"), rugged units suitable for flush mounting. The large, easy to read numbers are 3/32" wide and 13/32" high.

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CIRCLE 155 ON READER-SERVICE CARD

CAMERAS, Oscilloscope Recording

Allegany Instrument
Analab Instrument
Beattie Coleman
Burke & James
Camera Equipt Co
Crump Instrument
DuMont Labs Allen B
Dynex Inc
Electro-Medical Lab
Electronic Tube
Fairchild Camera & Instr
Geotechnical Corp
Gordon Enterprises
Hathaway Instruments
Heitz Inc Karl
Hewlett-Packard
Mast Development
Richardson Camera Co
Southwestern Indus Elx
Specialties Inc
Strand Engrg Co
Tektronix Inc
Telechrome Mfg Corp
Texas Instruments Inc
Traid Corp
Warrick Co F P

CAMERAS, Scientific, including Back Reflection

Abrams Instrument
Bausch & Lomb
Beattie Coleman
Beckman & Whitley
Bulova Research
Burke & James
Camera Equipt Co
Dynex Inc
Engis Equipment
Geotechnical Corp
Gordon Enterprises
Heitz Inc Karl
Henson Co Fred C
Instrument Corp of Fla
Jarrell Ash Co
Librascope Div
Mast Development
Palos Optical Co
Richardson Camera Co
Seiscor Div
Sterling Precision
Taller Cooper Div
Traid Corp
Zoomar Inc

CAMERAS, Scientific, Motion Picture, Including High Speed

Abtronics Inc
Analab Instrument
Analogue Controls Inc
Askania-Werke
Avco Corp
Beckman & Whitley
Belock Instrument
Burke & James
Camera Equipt Co
Chadwick-Helmuth
DuMont Labs Allen B
Dynex Inc
Eastman Kodak
Ercona Corp
Fairchild Camera & Instr
GE X-Ray Dept
Gordon Enterprises
Henson Co Fred C
Hulcher Co Inc C A
Instrument Corp of Fla
Lafayette Instr
Land-Air Inc
Librascope Div
Mast Development
Maurer Inc J A
Mitchell Camera
Richardson Camera Co
Sanders Labs
Sterling Precision
Traid Corp
Vought Camera Company
Warrick Co F P

COMPUTERS, Analog, Electronic

Airborne Instr Lab
Airpax Electronics
Allegany Instrument
American Bosch Arma
American Electronics Inc
Analogue Controls Inc
Applied Electronics
Arma Division
Astronics Div
Auerbach Electronics
Autonetics
Beckman/Berkeley Div
Bootshaft and Fuchs
Bulova Research
Budd Lewyt
Burroughs Corp
Computers Inc
Computer System Inc
Control Technology
Curtiss-Wright
Dalmotor Div
Daystrom/Mil Elx
Daystrom/Weston
Di/An Controls
DJECO
Donner Scientific
Dynex Inc
Ebex
Eldorado Electronics
Electro-Autosizing
Electro-Measurements
Electro Precision
Electronic Associates
Electronic Controls Inc
Electronic System Dev
Engis Equipment
Packer Div J W
Feedback Controls Inc
Ford Instr
Fosboro Company
General Computers Inc
General Controls
GE Apparatus Sales Div
GE Light Mil Elx Dept
General Railway Signal
Genesys Corp
Gerber Scientific Inst
Giannini Controls Corp
GPE Controls
GPS Instrument
Gulton Industries
Hagan Chem & Controls
Hamilton Standard Div
Hoover Electronics
Hydel Inc
IBM Corp
Kearfott Div
Kollsman Instr Corp
Leeds & Northrup
Librascope Div
Link Div
MacLaren & Co F B
Maxson Corp W L
Milgo Electronic
M-H Aeronautical Div
Missouri Res Labs
Monitor Systems Inc
Panellit Inc
Philbrick Researches Inc
Pickard & Burns
Potter Aeronautical
Precision Mechanisms Corp
RCA Defence Electronic
Rattray & Co Geo
Reeves Instr Corp
Research Inc
Southwestern Indus Elx
Standard Electric Time
Stavid Div
Sterling Precision
Strand Engrg Co
Stromberg Carlson Co
Swartwout Div
Systron Corp
Systron-Donner
Tapco Group
Tech Measurement Corp
Telechrome Mfg Corp
Telectro Industries
Texas Instruments Inc
Tracerlab Inc
Utechnics Inc

COMPUTERS, Digital, Electronic, (see also Digital Building Blocks)

Abacus Inc
Airborne Instr Lab
Airpax Electronics
American Bosch Arma
American Electronics Inc
Applied Electronics
Applied Research Labs
Arma Division
Auerbach Electronics
Autonetics
Beckman Sci & Proc Div
Bendix Computer Div
Bowmar Instrument
Budd Lewyt
Bulova Research
Burroughs Corp
Calif Computer Prods
Clary Corp
Cleveland Metal Spec
Computer Control
Concord Control Inc
Consolidated Avionics
Control Corp
Control Data Corp
Control Equipment Corp
Curtiss Wright
Daystrom/Controls Sys
Daystrom/Mil Elx
Daystrom/Weston
Deico Radio
Di/An Controls
Digitronics Corp
DJECO
Dynex Inc
Ebex
Eldorado Electronics
Electrodata Div
Electro-Autosizing
Electronic Computer Co
Electronic Controls Inc
Electronic System Dev
Engis Equipment
Ferranti Electric
Ford Instr
GE Apparatus Sales Div
GE Computer Dept
GE Light Mil Elx Dept
General Mills Inc
Genesys Corp
Giannini Controls Corp
GPE Controls
Gulton Industries
Hagan Chem & Controls
Hamilton Standard Div
Hoover Electronics
Hughes Products
Hydel Inc
IBM Corp
Kearfott Div
Kollsman Instr Corp
Land-Air Inc
Leeds & Northrup
Leemath Inc
Librascope Div
Link Div
Motorola Military Elx
Maxson Corp W L
Midwest Automatic Inc
Milgo Electronic
M-H Aeronautical Div
M-H Brown Instrs Div
Monitor Systems Inc
Monroe Calculating Mach
Monroe Electronics Div
National Cash Register
Navigation Computer Corp
Rendix Computer Div
Panellit Inc
Philco Corp
Potter Aeronautical
RCA Defence Electronic
RCA Systems Support
Ramsen Research
Royal McBee Corp
Southwestern Indus Elx
Specialties Inc
Stavid Div
Strand Engrg Co
Stromberg Carlson Co
Systron Corp
Systron-Donner
Sylvania Electronic
Taller Cooper Div
Tapco Group
Tech Measurement Corp
Technitrol Engrg
Telechrome Mfg Corp
Tele-Dynamics Div
Thompson-Ramo-Wooldridge
Trak Electronics
United Shoe Machinery
Victor Adding Machine
Walkirt Co
Wang Laboratories

COMPUTERS, Mechanical and Electro-Mechanical, (including Desk Computing Machines

Allen Business Machines
American Electronics Inc
Atlas Precision Prods
Bulova Research
Burroughs Corp
Clary Corp
Control Circuits Inc
Detecto Scales
Dynex Inc
Ford Instr
Friden Inc
Genesys Corp
Gerber Scientific Inst
Giannini Controls Corp
GPE Controls
Hamilton Standard Div
IBM Corp
Kearfott Div
Kellogg Switchboard
Librascope Div
MacLaren & Co F B
Monroe Calculating Mach
Monroe Electronics Div
National Cash Register
North Electric Co
Panellit
RCA Systems Support
Rattray & Co Geo
Sterling Precision
Tally Register Corp
United Shoe Machinery
Utechnics Inc
Victor Adding Machine

CONVERTERS, Analog-to-Digital

A R & T Electronics Inc
Abacus Inc
Adage Inc
Advanced Instr Corp
Airborne Instr Lab
Airflyte Electronics
Airpax Electronics
American Bosch Arma
American Data Dev
American Electronics Inc
American Meter Co
Anadex Instruments Inc
Analogue Controls Inc
Andromeda Inc
Applied Electronics
Automation Dynamics
Autonetics
Bailey Meter Co
Beckman Systems Div
Bendix Cincinnati Div
Bendix Eclipse-Pioneer
Briggs Associates
Burroughs Corp
Calif Computer Prods
Cheesman Instr
Coleman Electronics
Coleman Engrg
Computer Equipment
Consol Controls
Consol Electrodynamic
Consolidated Systems
Control Corp
Cox Instruments
Curtiss-Wright IMI
DJECO
Datex Corp
Daystrom/Control Sys
Daystrom/Mil Elx
Daystrom/Weston
Deltron Inc
Digitran Co
Detecto Scales
Detroit Controls
Di/An Controls
Digitran Co
Dycho Corp
Dymec Inc
Dynamics Research
Dynatronics Inc
Cynex Inc
Ebex
Eldorado Electronics
Electro-Autosizing
Electro Instruments
Electro-Logic Corp
Electro-Mec Lab
Electronic Associates
Electronic Computer Co
Electronic Controls Inc
Electronic Dev Corp
Electronic System Dev
Epsco Inc
Erie-Pacific Div
Erie Resistor
Fischer & Porter Co
Ford Instr
Gen Controls
Gen Dynamics/Astronautics
Gen Dynamics/Electronics
Gen Electric Co
Gen Precision/Aerospace
Gen Precision/Kearfott
Gen Precision/Librascope
Gen Precision/Link
Gen Precision/Singer
Gen Time Corp
Genesys Corp
Gerber Scientific Inst
Giannini Controls Corp
GPE Controls
Gilfillan Bros Inc
Gulton Industries
Hagan Chem & Controls
Hamilton Standard Div
Hathaway Instruments
Heath Co
Heiland Research
Hewlett-Packard
Hoover Electronics
Hughes Products
Hydel Inc
IBM Corp
Instrument Corp of Fla
Kearfott Div
Kintel
Kollsman Instr Corp
Leeds & Northrup
Librascope Div
Link Div
Litton Industries
Lockheed Missiles
Logistics Research
Lundy Electronics
Magnetic Amplifiers
Marconi Instruments
Martin Co
Maxson Corp W L
Measurements Corp
Metrodata Corp
Midwest Automatic Inc
Milgo Electronic
Minneapolis-Honeywell
Missouri Res Labs
Monitor Systems Inc
Monroe Calculating Mach
Monroe Electronics Div
Motorola Military Elx
National Cash Register
Navigation Computer Corp
Nuclear Data Inc
Packard Bell Computer
Packer Div J W
Philbrick Researches Inc
Philco Corp
Potter Aeronautical
Precision Mechanisms Corp
Princeton Electronic Prods
RCA Defence Electronic
RCA Systems Support
Ramsen Research
Rattray & Co Geo
Raytheon Co
Reeves Instr Corp
Research Inc
Rheem Mfg Co
Rosemount Engrg
Royal McBee Corp
Sanborn Co
Sanders Labs
Servo Corp of America
Servomechanisms Inc
Solartron Electronic
Southwestern Indus Elx
Specialties Inc
Stavid Div
Sterling Precision
Stromberg Carlson Co
Systron Corp
Systron-Donner
Tapco Group
Tech Measurement Corp
Technitrol Engrg
Telechrome Mfg Corp
Tele-Dynamics Div
Texas Instruments Inc
Thompson-Ramo-Wooldridge
Trak Electronics
Tracerlab Inc
Transitron Electronic
Trio Laboratories
Tung-Sol Electric
United Shoe Machinery
Utechnics Inc
Victor Adding Machine
Vitro Corp of America
Wang Laboratories
Weston Instruments
Wiancko Engrg
Wilcox Electric
Wyle Laboratories
Yardney Electric
Zenith Radio Corp

CONVERTERS, Digital-to-Analog

Abacus Inc
Adage Inc
Advanced Instr Corp
Airborne Instr Lab
Airflyte Electronics
Airpax Electronics
American Bosch Arma
American Data Dev
American Electronics Inc
Anadex Instruments Inc
Analogue Controls Inc
Andromeda Inc
Applied Electronics
Automation Dynamics
Autonetics
Bailey Meter Co
Beckman Systems Div
Bendix Cincinnati Div
Bendix Eclipse-Pioneer
Briggs Associates
Burroughs Corp
Calif Computer Prods
Cheesman Instr
Coleman Electronics
Coleman Engrg
Computer Equipment
Consol Controls
Consol Electrodynamic
Consolidated Systems
Control Corp
Cox Instruments
Curtiss-Wright IMI
DJECO
Datex Corp
Daystrom/Control Sys
Daystrom/Mil Elx
Daystrom/Weston
Deltron Inc
Digitran Co
Detecto Scales
Detroit Controls
Di/An Controls
Digitran Co
Dycho Corp
Dymec Inc
Dynamics Research
Dynatronics Inc
Cynex Inc
Ebex
Eldorado Electronics
Electro-Autosizing
Electro Instruments
Electro-Logic Corp
Electro-Mec Lab
Electronic Associates
Electronic Computer Co
Electronic Controls Inc
Electronic Dev Corp
Electronic System Dev
Epsco Inc
Erie-Pacific Div
Erie Resistor
Fischer & Porter Co
Ford Instr
Gen Controls
Gen Dynamics/Astronautics
Gen Dynamics/Electronics
Gen Electric Co
Gen Precision/Aerospace
Gen Precision/Kearfott
Gen Precision/Librascope
Gen Precision/Link
Gen Precision/Singer
Gen Time Corp
Genesys Corp
Gerber Scientific Inst
Giannini Controls Corp
GPE Controls
Gilfillan Bros Inc
Gulton Industries
Hagan Chem & Controls
Hamilton Standard Div
Hathaway Instruments
Heath Co
Heiland Research
Hewlett-Packard
Hoover Electronics
Hughes Products
Hydel Inc
IBM Corp
Instrument Corp of Fla
Kearfott Div
Kintel
Kollsman Instr Corp
Leeds & Northrup
Librascope Div
Link Div
Litton Industries
Lockheed Missiles
Logistics Research
Lundy Electronics
Magnetic Amplifiers
Marconi Instruments
Martin Co
Maxson Corp W L
Measurements Corp
Metrodata Corp
Midwest Automatic Inc
Milgo Electronic
Minneapolis-Honeywell
Missouri Res Labs
Monitor Systems Inc
Monroe Calculating Mach
Monroe Electronics Div
Motorola Military Elx
National Cash Register
Navigation Computer Corp
Nuclear Data Inc
Packard Bell Computer
Packer Div J W
Philbrick Researches Inc
Philco Corp
Potter Aeronautical
Precision Mechanisms Corp
Princeton Electronic Prods
RCA Defence Electronic
RCA Systems Support
Ramsen Research
Rattray & Co Geo
Raytheon Co
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Specialties Inc
Stavid Div
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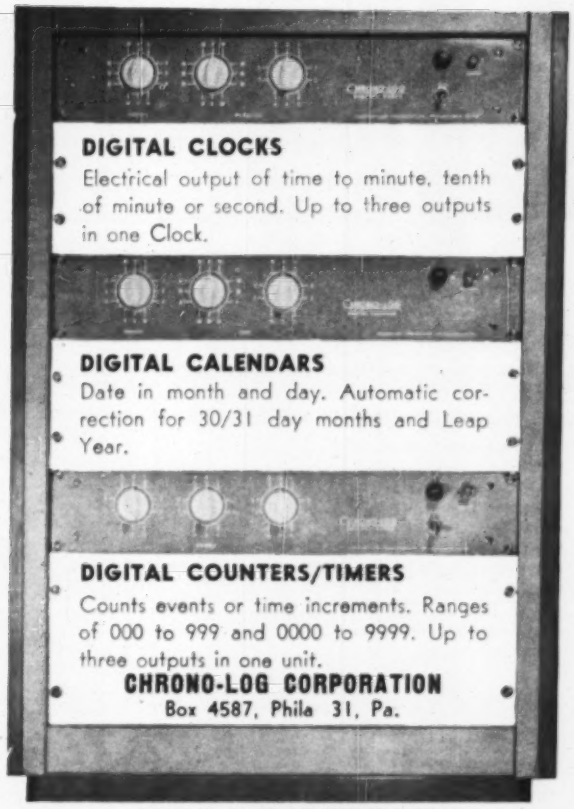
Stromberg Carlson Co
Systron Corp
Systron-Donner
Tapco Group
Tech Measurement Corp
Technitrol Engrg
Telechrome Mfg Corp
Tele-Dynamics Div
Texas Instruments Inc
Thompson-Ramo-Wooldridge
Trak Electronics
Tracerlab Inc
Transitron Electronic
Trio Laboratories
Tung-Sol Electric
United Shoe Machinery
Utechnics Inc
Victor Adding Machine
Vitro Corp of America
Wang Laboratories
Weston Instruments
Wiancko Engrg
Wilcox Electric
Wyle Laboratories
Yardney Electric
Zenith Radio Corp


DIGITAL CLOCKS
Electrical output of time to minute, tenth of minute or second. Up to three outputs in one Clock.
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Date in month and day. Automatic correction for 30/31 day months and Leap Year.
DIGITAL COUNTERS/TIMERS
Counts events or time increments. Ranges of 000 to 999 and 0000 to 9999. Up to three outputs in one unit.
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Genesys Corp
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Hoover Electronics
Industrial Control Co
Instr Development Labs
Julie Research Labs
Kearfott Div
Kollsman Instr Corp
Librascope Div
Link Div
Milgo Electronic
M-H Aeronautical Div
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Motorola Military Elx
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Non-Linear Systems
Norden Division
Northeastern Engrg
Norwood Controls
Orbitran Co
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Philco Corp
Potter Aeronautical
RCA Systems Support
Radiation Inc
Radiation Instr Dev Lab
Ransom Research
Rattray & Co Geo
Rosemount Engrg Co
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Streeter Amet
Stromberg Carlson Co
Swartwout Div
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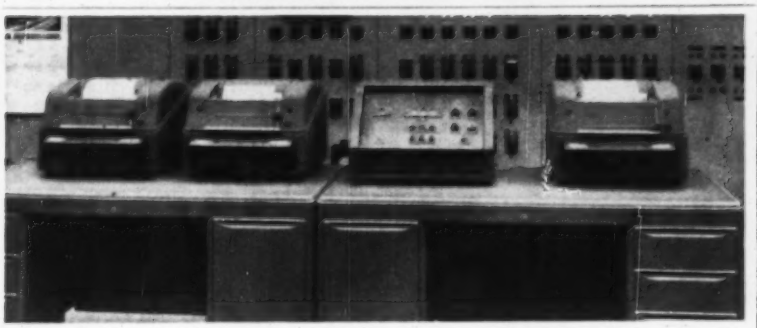
Telecomputing Corp
Telectro Industries
Tele-Dynamics Div
Texas Instruments Inc
Thompson-Ramo-Wooldridge
United Engineers Inc
United Shoe Machinery
Vidar Corp
Waltham Precision Instr
Wang Laboratories
Wright Machinery Co



Bailey 750 Information Systems

Accurate, dependable Bailey Measuring Instruments and Transducers combine with the latest techniques in data handling to produce an integrated system best suited to your process.

A Bailey 750 information system rapidly scans hundreds of measurements of temperatures, pressures, flows, etc., sounds an alarm for off-normal values, and reads out any or all data periodically or on demand.

Transmission of both analog signals to, and digital signals from the information system may be via: high frequency signals (radio, UHF, microwave); direct cable (AC or DC); or long distance lines (telephone, telegraph, carrier currents).

Readout methods from which you may choose include any one or any combination of the following: Printed Log Sheets, Indicator Lights, Punched Tape, Magnetic Tape.

The system utilizes the Bailey Building Block method of construction with functionally designed interchangeable plug-in modules. All inter-unit wiring connections are accessible at rear of cabinet. Where applicable, each module incorporates visual indications of circuit action. A centrally located check point panel is included for all important input, output, and control signals.

Your Bailey 750 information system may be installed in connection with a new, complete measuring and controlling system, or it may be used with existing primary measuring devices.

Request Bulletins E72-1 and E72-2.

BAILEY METER COMPANY
1041 Ivanhoe Road • Cleveland, O.
Bailey Meter Company Limited, Montreal, Canada

CIRCLE 157 ON READER-SERVICE CARD

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Abacus Inc
Adage Inc
Airborne Instr Lab
Airflyte Electronics
American Bosch Arma
Anadex Instruments Inc
Applied Electronics
Auerbach Electronics
Automation Dynamics
Bailey Meter Co
Beckman/Berkeley Div
Burroughs Corp
Calif Computer Prods
Coleman Electronics
Computer Equipment
Control Equipment Corp
DIECO
Datex Corp
Daystrom/Control Sys
Di/An Controls
Digitran Co
Dymec Inc
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Ebex
Eldorado Electronics
Electro Instruments
Electro-Logic Corp
Electronic Associates
Electronic Computer Co
Electronic Dev Corp
Electronic Engrg Co Calif
Electronic System Dev
Engineered Electronics
Erie-Pacific Div
Fischer & Porter Co
General Devices
Genesys Corp
Gerber Scientific Inst
Gurley W & L E
Hamilton Standard Div
Haydon Co A W
Hoover Electronics
Industrial Electronic
Julie Research Labs
Kearfott Div
Milgo Electronic
Model Engrg
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Moore Associates
Navigation Computer Corp
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Norwood Controls
Orbitran Co
Packard Bell
Panellit Inc
Pearce-Simpson Inc
RCA Systems Support
Radiation Inc
Ransom Research
Rotary Devices Corp
Southwestern Indus Elx
Stromberg Carlson Co
Tally Register Corp
Tech Measurement Corp
Technitrol Engrg
Tele-Dynamics Div
Transistor Specialties
United Shoe Machinery
Victor Adding Machine
Wang Laboratories

CONVERTERS, Digital-to-Analog

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Airpax Electronics
American Bosch Arma
Analogue Controls Inc
Andromeda Inc
Applied Electronics
Automation Dynamics
Autonetics
Bailey Meter Co
Beckman-Berkeley Div
Boonshaft and Fuchs
Briggs Associates
Burroughs Corp
Calif Computer Prods
Coleman Electronics
Coleman Engrg
Computer Equipment
Control Equipment Corp
Convair Instruments
Cox Instruments
Curtiss-Wright IMI
DIECO
Datex Corp
Daystrom Control System
Daystrom/Mil Elx
Di/An Controls
Diehl Mfg Co
Digitran Co
Dynatronics Inc
Dymec Inc
Ebex
Eldorado Electronics
Electro-Autosizing
Electro Instruments
Electronic Associates
Electronic Controls Inc
Electronic Dev Corp
Electronic System Dev
Epsco Inc
Ford Instr
General Devices
Genesys Corp
Gerber Scientific Inst
Gulton Industries
Hagan Chem & Controls
Hamilton Standard Div
Haydon Co A W
Hewlett-Packard
Hoover Electronics
Kearfott Div
Kollsman Switchboard
Julie Research Labs
Land-Air Inc
Link Div
Milgo Electronic
M-H Aeronautical Div
M-H Industrial Systems
Model Engrg
Monitor Systems Inc
Moore Associates
Moseley Co F L
Nacimco Products
Navigation Computer Corp
Northeastern Engrg
Packard Bell
Panellit Inc
Pearce-Simpson Inc
Philco Corp
Potter Aeronautical
RCA Systems Support
Radiation Inc
Ransom Research
Rotary Devices Corp
Southwestern Indus Elx
Spectra Electronics
Spectrum Instruments
Stromberg Carlson Co
Systron-Donner
Telechrome Mfg Corp
Tele-Dynamics Div
Thompson-Ramo-Wooldridge
Transistor Specialties
United Engineers Inc
United Shoe Machinery
Vidar Corp
Wang Laboratories
Waugh Engrg Co
WE-Director Systems

CONVERTERS, Punched Cards

American Electronics Inc
American Data Div
Anadex Instruments Inc
Beckman/Berkeley Div
Briggs Associates
Burroughs Corp
Collins Radio-W Div
Convair Instruments
Di/An Controls
Digitronics Corp
Electro Instruments
Fischer & Porter Co
Genesys Corp
Gerber Scientific Inst
Gordon Enterprises
Gulton Industries
Hickok Electrical Instr
IBM Corp
M-H Industrial Systems
Moseley Co F L
Philco Corp
Ransom Research
Systematics Inc
Systron-Donner
Tailer Cooper Div
Tally Register Corp
Technitrol Engrg
Transistor Specialties
United Shoe Machinery
Wang Laboratories

CONVERTERS, Punched Tape

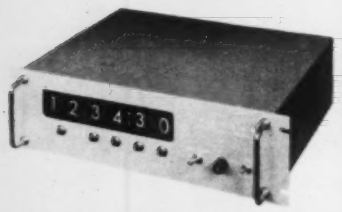
Airborne Instr Lab
American Electronics Inc
Anadex Instruments Inc
Auerbach Electronics
Briggs Associates
Burroughs Corp
Convair Instruments
Di/An Controls
Digitronics Corp
Eldorado Electronics
Electro Instruments
Electronic Engrg Co Calif
Ferranti Electric
Fischer & Porter Co
Genesys Corp
Gerber Scientific Inst
Gulton Industries
IBM Corp
M-H Industrial Systems
Moseley Co F L
Northeastern Engrg
Philco Corp
Ransom Research
Systematics Inc
Systron-Donner
Tailer Cooper Div
Tally Register Corp
Technitrol Engrg
Trak Electronics
Transistor Specialties
United Shoe Machinery
Wang Laboratories

COUNTERS, Electrical Impulse

Abacus Inc
Abrams Instrument
American Data Div
Anadex Instruments Inc
Applied Electronics
Automatic Timing & Contls
Baird-Atomic Inc
Baranoff & Assocs
Beckman-Berkeley Div
Bowman Instrument
Bristol Co
Budd Co Inst Div
Burroughs Corp
C & K Components
Calif Computer Prods
Chrono-Log Corp
Computer Measurements
Control Equipment Corp
Daystrom/Control System
Di/An Controls
Digitran Co
Durant Mfg
Dymec
Eagle Signal
Electric Tachometer
Electro Instruments
Electro Precision
Electronic Computer Co
Epic Inc
Erie Pacific
Erie Resistor
Exline Engrg
Fischer & Porter Co
Freed Transformer
General Controls
General Devices

PARABAM

DIGITAL CLOCKS



The Parabam Digital Clock provides accurate time-of-day for **programming • process control • data processing • computing systems • test data recording.** Allows up to 86,400 contact combinations with time-of-day readings in increments of one minute, tenth-minute on one sec. Has single plate in-line lamp bank display. In 12 or 24 hour AM-PM configurations.

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Landis & Gyr
Link Div
Monroe Components Div
Navigation Computer Corp
North Electric Co
Northeastern Engrg
Nuclear-Chicago
Nuclear Elx Corp
Philco Corp
Photocon Research
PIC Automation Ctls
Potter Aeronautical
Presin Co
RCA Systems Support
Ram Meter Inc
Ransom Research
Redford Corp
Richardson Scale Co
Sciaky Bros Inc
Standard Instrument
Stelma Inc
Stewart M C
Systron Corp
Systron-Donner
Taller Cooper Div
Telechrome Mfg Corp
Telecomputing Corp
Tempo Instrument
Trott Electronics
Veeder-Root Inc
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Wang Laboratories

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Appalachian Electronic
Autotron Inc
Baranoff & Assocs
Beckman/Berkeley Div
Beva Laboratory
Cramer Controls Corp
Davenport Mfg
Durant Mfg
Dynapar Corp
Eastern Specialty Co
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Electronic Control
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Freed Transformer
General Controls
Gurley W & L E
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Hoffman Electronics
Hydel Inc
Instr Development Co
Kavamil Co
Kollsman Instr Corp
Machinery Electrification
Mason Instr Co
National Standard Elx
Navigation Computer Corp
Photobell Co
PIC Automation Ctls
Post Electronic
Potter Aeronautical
Potter Instr Co
Presin Co
Redford Corp
Spectra Electronics
Standard Instrument
Transistor Specialties
Tri-Tronics Co
Trott Electronics
Veeder-Root Inc
Warner Electronic Devices

COUNTERS, Photoelectric, Curve Followers

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Kollsman Instr Corp
National Standard Elx
Spectra Electronics
Sterling Precision

DATA-PROCESSING SYSTEMS and COMPONENTS, including Tape Transports, Perforators, Readers, Loggers, etc. (see also Computers, also Printers)

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Advanced Instr Corp
Airborne Instr Lab
Aitronics Inc
American Data Div
American Electronics Inc
Ampex Data Products
Anadex Instruments Inc
Anelex Corp
Applied Electronics
Arnoux Corp
Atronic Products
Auerbach Electronics
B & F Instruments
Bailey Meter Co
Beckman Systems Div
Bendix Computer Div
Briggs Associates
Budd Lewyt
Burroughs Corp
Bytrex Corp.
Calif Technical Indus
CBS Laboratories
Chromo-Log Corp
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Coleman Engrg
Collins Radio-W Div
Computer Control
Computer Equipment
Computer System Inc
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Consolidated Avionics
Consol Electrodynamics
Consolidated Systems
Control Corp
Control Data Corp
Control Equipment Corp
Convair Instruments
Cox Instruments
Curtiss-Wright EMI
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Datascan Inc
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Daystrom/Weston
Designers for Industry
DU/An Controls
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Dymec Inc
Dynametrics Corp
Dynatronics Inc
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Electro-Logic Corp
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Electronic Dev Corp
Electronic Engrg Co Calif
Epsco West
Fairchild Camera & Instr
Ferranti Electric
Fischer & Porter Co
Flow Corporation
Friden Inc
Garlynn Engrg Co
General Devices
GE Apparatus Sales Div
GE Computer Dept
Geneeye Corp
Geotechnical Corp
Gerber Scientific Inst
Gilmore Industries
Gordon Enterprises
Gyrex Corp
Hagan Chem & Controls
Hanson-Gorrill-Brian
Hoover Electronics
Hughes Products
Hydel Inc
IBM Corp
Instrument Lab Inc
Intelex Systems Inc
Kavamil Co
Kearfott Div
Laboratory for Electronics
Leeds & Northrup
Librascope Div
Link Div
Lundell & Co
Lundy Mfg Corp
Magnasyne Mfg Co
Magnatron Co
Marquardt-Pomona Div
Midwestern Instrs
Milgo Electronic
M-H Brown Instrs Div
M-H Industrial Systems
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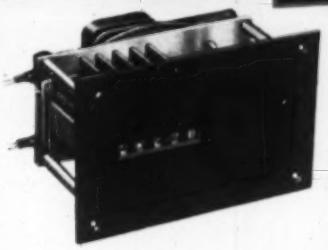
Missouri Res Labs
Monitor Systems Inc
Monroe Components Div
Moore Associates
Moseley Co F L
Motorola Military Elx
National Cash Register
Non-Linear Systems
Norden Division
North Electric Co
Pacific Technical
Panellit Inc
Parabam Inc
Pearce-Simpson Inc
Pennwood Numechron
Philco Corp
Potter Instr Co
Precision Instr Co
Precision Instrument Co
RCA Defence Electronic
RCA Systems Support
Radiation Co
Ransom Research
Raytheon/Missile Sys
Richardson Camera Co
Rowe Engravers Inc
Sanborn Company
Sangamo Electric Co
Sciaky Bros Inc
Shepard Laboratories
Southwestern Indus Elx
Specialties Inc
Stavid Div
Stromberg Carlson Div
Stromberg-Carlson San Diego
Systematics Inc
Systron Corp
Systron-Donner
Sylvania Electronic
Telectro Industries
Tele-Dynamics Div
Teletype Corp
Taller Cooper Div
Tally Register Corp
Tapco Group
Taylor Instrument
Technitrol Engrg
Telechrome Mfg Corp
Telecomputing Corp
Thompson Ramo-Wooldridge
Traid Corp
Union Switch & Signal
United Shoe Machinery
Vanguard Instrument
Vapor Recovery Systems
Victor Adding Machine
Vidar Corp
Viking Industries
Wang Laboratories
Westronics Inc

Veeder-Root COUNTER READOUT Bulletin



Data Readout Counters

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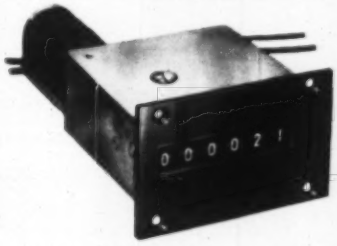
A complete square case line for light duty counting where small size is required. Available as direct drive, revolution, ratchet, rotary ratchet and geared counter.



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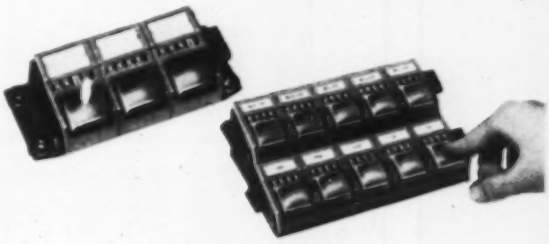

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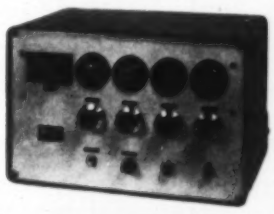

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Calif Computer Prods
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Computer Equipment
Computer Measurements
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Delco Radio
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Digitronics Corp
DJECO
Dymec Inc
Dynamic Controls
Dynatronics Inc
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Electro Instruments
Electro Precision
Electrodata Div
Electronic Dev Corp
Electronic System Dev
Engineered Electronics
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General Devices
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Land-Air Inc
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Librascope Div
Link Div
MacLaren & Co F B
Marquardt-Pomona Div
Midwestern Instrs
Milgo Electronic
M-H Industrial Systems
Monitor Systems Inc
Monroe Electronic Div
Motorola Military Elx
Navigation Computer Corp
North Electric Co
Packard Bell
Paraham Inc
RCA Defence Electronic
RCA Systems Support
Ransom Research
Rixon Electronics
Robotomics Inc
Southwestern Indus Elx
Stavid Div
Systron Corp
Systron-Donner
Sylvania Electronic
Tally Register Corp
Telechrome Mfg Corp
Tele-Dynamics Div
Tempo Instrument
Thompson-Ramo-Wooldridge
Traid Corp
Trak Electronics
Walkirt Co
Wang Laboratories

DIGITAL READOUT INDICATORS (see also Data Process.ng)
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Anadex Instruments Inc
Applied Electronics
Baldwin-Lima-Hamilton
Beckman Berkeley Div
BJ Electronics
Borg Equipment Div
Borg-Warner Controls
Bowmar Instrument
Bowser Inc
Burroughs Corp
Burroughs Elx Tube
Bushnell Co D P
Bytrex Corp
CBS Laboratories
Computer Measurements
Consol Electrodynamics
Consolidated Systems
Control Equipment Corp
Cox Instruments
Cramer Controls Corp
Data Display Inc
Daystrom/Mil Elx
Detroit Controls
Dialight Corp
Digitran Co
Durant Mfg
Dymec Inc
Dynametrics Corp
Dynamics Research
Dynapar Corp
Dynex Inc
Eldorado Electronics
Electro Instruments
Electrodata Div
Electronic Associates
Electrosnap
Engineered Electronics
Engis Equipment
Erie Pacific
Fischer & Porter Co
General Controls
General Devices
General Railway Signal
Genesys Corp
Gerber Scientific Inst
Gilmore Industries
Gulton Industries
Hagan Chem & Controls
Haydon Co A W
Hughes Products
Industrial Electronic
Kay Electric
Kearfott Div
Laboratory for Electronics
Landis & Gyr
Leeds & Northrup
Librascope Div
Marco Industries
Marquardt-Pomona Div
Mast Development
Milgo Electronic
Millman Engrg Co
Monitor Systems Inc
Motorola-Military Elx
Navigation Computer Corp
Non Linear Systems
Norden Division
North Atlantic Indus
Northeastern Engrg
PIC Automation Ctls
Performance Measurements
Potter Aeronautical
Presin Co
RCA Defence Electronic
Radio Frequency Labs
Ransom Research
Robotomics Inc
Ruge Associates
Slocomb Co J T
Southwestern Indus Elx
Sterling Precision
Stromberg-Carlson San Diego
Systron Corp
Systron-Donner
Tech Measurement Corp
Telechrome Mfg Corp
Transistor Electronics
Union Switch & Signal
United Engineers Inc
Victor Adding Machine
Wayne-George Corp
Westronics Inc

ENCODERS, Shaft Position
Advanced Instr Corp
Airflyte Electronics
Alden Electronic
American Bosch Arma
Applied Electronics
Bendix Eclipse-Pioneer
Coleman Electronics
Collins Radio-W Div
Concord Control Inc
Daystrom/Mil Elx
Digitran Co
Dynamics Research
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Ford Instr
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Norden Division
Strand Engrg Co
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Telechrome Mfg Corp
Telectro Industries
Wayne-George Corp
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Midwestern Instrs
RCA Defence Electronic
Telectro Industries
Technitrol Engrg

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104 pages plus vi, 1958, illustrated, company index, author index, subject index

". . . . a practical text . . . covers fundamentals, basic bridge circuits, typical applications, and surveys typical commercial instruments which use or are used with strain gages."

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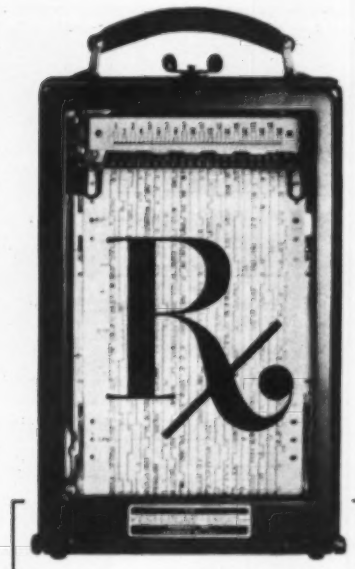

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Foxboro Company
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Reflectone Electronics
Rockwell Mfg Co
Royson Engrg Co
Scientific-Atlanta
Servo Systems Co
Southwestern Indus Elx
Summers Gyroscope
Swartwout Div
United Engineers Inc

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Airborne Instr Lab
Analab Instrument
Burroughs Corp
Datex Corp
Electronic Tube
General Electrodynamics
Hughes Products
IBM Corp
Image Instruments
Intercontinental Elx
RCA Defence Electronic
Ransom Research
Sterling Precision
Vacuum Tube Prods

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Airborne Instr Lab
Airtronics Inc
Ampex Data Products
Anadex Instruments Inc
Analogue Controls Inc
Andersen Labs
Arnmic Instr Co
Auerbach Electronics
Autonetics
BJ Electronics
Borg-Warner Controls
Bryant Computer
Burroughs Corp
C & K Components
Calif Computer Prods
Computer Control
Computer Equipment
Consol Controls
Consol Electrodynamics
Control Electronics
Consolidated Systems
Daystrom Control System
Daystrom/Mil Elx
Di/An Controls
Electrodata Div
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Ferranti Electric
General Ceramics
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General Mills Inc
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Midwestern Instrs
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Monitor Systems Inc
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Monroe Electronics Div
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Packard Bell
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Rese Engrg Inc
Rixon Electronics
Southwestern Indus Elx
Stavid Div
Strand Engrg Co
Stromberg Carlson Co
Sylvania Electronic
United Control Corp
Wang Laboratories

PLANIMETERS, Automatic Flow Recording

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Cramer Controls Corp
Librascope Div
M-H Brown Instrs Div
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PLANIMETERS, Linear and/or Radial (see also Integrators)

Epic Inc
Foxboro Company
Librascope Div
Los Angeles Scien Instr
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Saunders Labs
Scientific-Atlanta

PLANIMETERS, Square Root

American Meter Co
Fischer & Porter Co
Librascope Div
Los Angeles Scien Instr
M-H Brown Instrs Div
Pacific Transducer Corp
Royson Engrg Co

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Baranoff & Assocs
Beckman/Berkeley Div
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Foxboro Company
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Kimball Co A
Landis & Gyr
Monroe Components Div
Marquardt-Pomona Div
Northeastern Engrg
Philco Corp
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Shepard Laboratories
Southwestern Indus Elx
Standard Instrument
Streeter Amet
Stromberg-Carlson San Diego
Stromberg-Carlson Co
Systron-Donner
Tailer Cooper Div
Tally Register Corp
Technitrol Engrg
Telechrome Mfg Corp
Telecomputing Corp
Tele-Dynamics Div
Teletype Corp
Thompson-Ramo
Wang Laboratories

RECORDERS, Circular Chart (see also Object of Measurement)

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Airborne Instr Lab
Amthor Testing
Automatic Timing & Contls
B and K Instruments
Bailey Meter Co
Barber-Colman
B-I-F Industries
Bristol Co
Daystrom-Weston
Dickson Co
Electric Autolite
Engler Instr
Fischer & Porter Co
Foxboro Company
Gerber Scientific Inst
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Hagan Chem & Controls
Hays Corporation
Industrial Instrs Inc
Leeds & Northrup
Mason Neilan
M-H Brown Instrs Div
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Sperling Equipment Div
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Techni-Rite Elx
Telectro Industries
Thermo Electric Co
Wallace & Tiernan
WE Instr & Control Sys
Weksler Instruments
Westinghouse Electric
Wheelco Instruments Div
Yarnall-Waring

RECORDERS, Electrosensitive

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Airborne Instr Lab
Alden Electronic
Automatic Timing & Contls
Century Elx & Instrs
Consol Electrodynamics
Electro-Autosizing
Geotechnical Corp
Hathaway Instruments
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Unmatched versatility with PHOTRON OSCILLOGRAPHS and AMPLIFIERS

OSCILLOGRAPHS

Rectilinear recording with ink or heated stylus. **Curvilinear** recording with ink or electric stylus. AC or DC* chart drive. Frequency response from DC to 150 cps.

Up to 8 channels.
Portable or rack mounted.

●

NEW Operational Amplifier

Chopper stabilized with feedback attenuation. Single units or modules of 6.

Fixed gain settings from unity to 1000.

●

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DC, Chopper Stabilized, and Carrier amplifiers for use with any direct-writing galvanometer or for general laboratory use. Gains from 25 to 10,000. Frequency response from DC to 50kc. *Request Bulletin 210.*

●

NOW AVAILABLE:

Transistorized galvanometers with voltage gains up to 10, and current gains up to 1000. The use of silicon transistors assures good temperature stability. *Request Bulletin 220.*

*for airborne recording

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CIRCLE 166 ON READER-SERVICE CARD

NAME YOUR OSCILLOGRAPHIC RECORDING NEEDS

INPUT CHARACTERISTICS

FREQUENCY RESPONSE RANGE ... RECORDING METHOD

PACKAGING ... NUMBER OF CHANNELS

LARGE-SCREEN VISUAL PRESENTATION

TRANSDUCERS

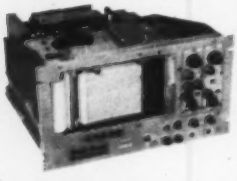
RELATED INSTRUMENTS, ACCESSORIES

SANBORN

"BUILDING-BLOCK" FLEXIBILITY CAN MEET THEM

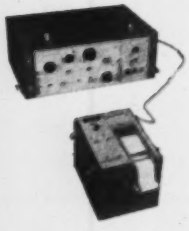
1-channel, 21 lb. portables — Model 299 for general purpose DC recording, Model 301 for AC strain gage recording.

Model 320 2-channel, 4-speed portable . . . 50 mm wide channels.



Model 297 2-channel recorder, rack mount in 10½" space or portable housing.

1- to 8-channel "150's", DC to 100 cps.

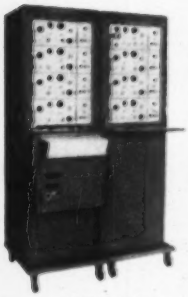


MODEL 151

MODEL 152

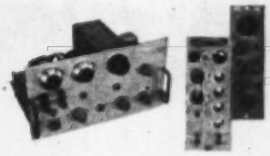
MODEL 154

MODEL 156

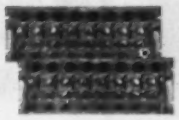


MODEL 158

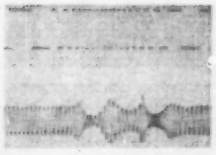
CIRCLE 167 ON READER-SERVICE CARD

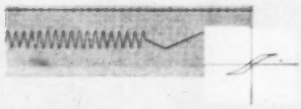


Interchangeable, plug-in preamps for "850" systems include Carrier, Phase-Sensitive Demodulator, DC Coupling, Low Level . . . for "350" systems, all "850" types plus 400 Cycle Frequency Deviation, Logarithmic types . . . for "150" systems, all "350" and "850" types plus AC-DC, AC Wattmeter, RMS Volt/Ammeter, Frequency Meter, Stabilized DC types, and Tripleser 3-channel electronic switch.



Single-chassis, 6- and 8-channel amplifiers for "950" systems include high and low gain general purpose types . . . for "650" systems and optical oscillographs of other manufacturers, a 6- or 8-channel medium gain amplifier.





From DC to 150 cps with most Sanborn systems which produce inkless, heated stylus recordings in true rectangular coordinates . . . up to 5000 cps with new optical system using ultraviolet-sensitive paper. *Optical X-Y Recorder* has 2500"/sec. writing speed, immediate readout.

Sanborn "building block" units give you extremely wide packaging flexibility: "150" amplifiers and recorders can be separately housed or combined in mobile cabinets . . . "350" preamps may be used alone or in a system . . . "850" and "950" systems can have up to 16 channels in a single cabinet . . . optical 5000 cycle recorder can be housed with X-Y recorder, etc. All Sanborn multi-channel recorder assemblies and 350, 650, 850 & 950 amplifier modules fit standard 19" racks.

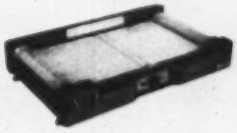
Up to 8 brilliant, long-persistence traces presented simultaneously on the new 17" Sanborn Model 769 scope. Circuit includes individual gating amplifiers for each Y axis.

SANBORN COMPANY

INDUSTRIAL DIVISION

175 Wyman Street, Waltham 54, Mass.

Measure linear velocity and displacement with Sanborn LVsyn, Linearsyn and "probe-style" transducers. Strokes from ±0.005" to 10", high sensitivities, 0.5% linearity; special types for high temperatures, pressures . . . single-ended or differential pressure measurements at 40 μv/0.1mmHg/volt sensitivities, with 267, 268 Series pressure transducers.



Complete Sanborn equipment for your oscillographic recording needs includes a variable speed *Chart Viewer* . . . *Servo Monitor Phase Shifter* . . . "150" *Series Wide Band Driver Amplifier* . . . a *Monitor Meter* . . . 4- to 32- channel *Event Recorders with Transistor Driver Amplifiers.*

See how Sanborn oscillographic recording building-block flexibility can provide the most suitable equipment for your needs. Ask your Sanborn Sales-Engineering Representative — offices in principal cities throughout the United States, Canada and foreign countries.

Economical 8-channel "950" high gain, general purpose system.

Model 958-16 Complete 16-channel system with amplification . . . cabinet or rack mounting.

6- or 8-channel "850's", min. panel space.

Model 650 1- to 24-channel optical system, DC to 5000 cps.

Model 670A High speed (100 cps) optical X-Y recorder.

Simplified 6- or 8-channel system, 5 volts full scale.

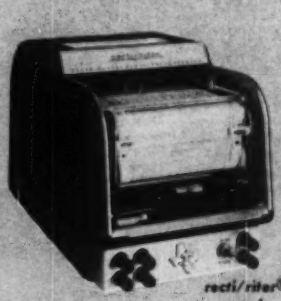
6- or 8-channel "350's", DC to 150 cps.

CIRCLE 167 ON READER-SERVICE CARD

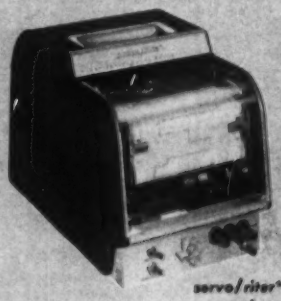
from T/I

INDUSTRY'S MOST COM

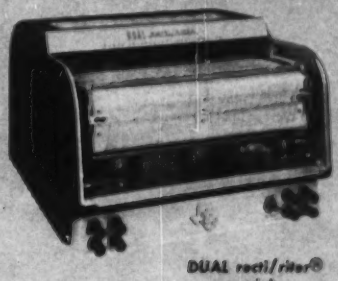
GALVO and SERVO PORTABLE



recti/riter® recorder



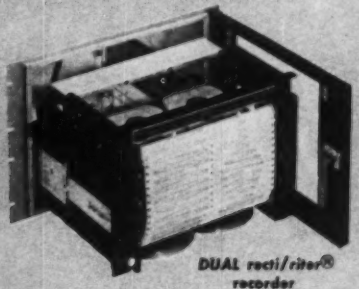
servo/riter® recorder



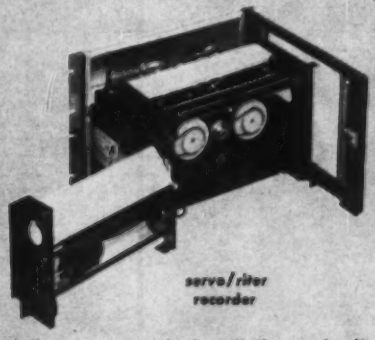
DUAL *recti/riter*® recorder

Both ***recti/riter***® and ***servo/riter*** recorders are offered in convenience-packed portable models with all routine adjustments and controls at your fingertips. ***recti/riter***® recorders are offered in the widest available d-c and a-c milliampere, ampere, and voltage ranges; expanded scale a-c voltage ranges; and frequency ranges. ***servo/riter*** recorders are available with electrical spans from 1 to 100 millivolts d-c with span step response time less than 0.5 second.

GALVO and SERVO FLUSH-MOUNTING



DUAL *recti/riter*® recorder



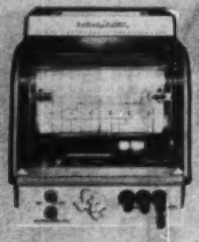
servo/riter recorder

recti/riter® recorder

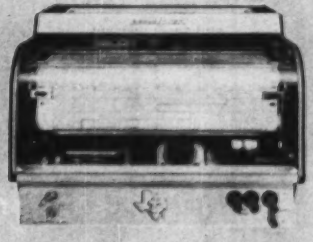
The same industry-proved performance characteristics and wide ranges offered in portable models are also available in ***recti/riter***® and ***servo/riter*** flush-mounting recorders . . . plus such convenience features as: Chassis rolls out and quickly disconnects for maximum ease in installation and adjustment; illuminated scales and pointers maintain high readability regardless of room light level; swing-open chart carriage permits easy paper handling; advanced design eliminates chart drive gear train lash.

SINGLE WIDE DUAL CHARTS

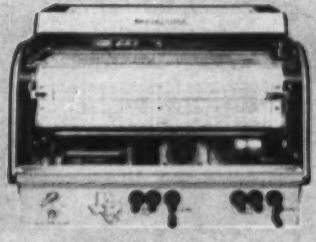
(Portable or Flush)



recti/riter® or ***servo/riter*** recorders: Single Channel, Narrow Grid (4.5-inch grid, 6-inch chart).



servo/riter recorder (only): Single Channel, Wide Grid (9.75-inch grid, 11¾-inch chart); or Dual Channel (two overlapping pens), Wide Grid.



recti/riter® or ***servo/riter*** recorders: Dual Channel, Narrow Grids (two 4.5-inch grids, 11¾-inch chart).

PLETE RECORDER LINE

recti/riter®

RECTILINEAR GALVANOMETRIC RECORDERS

and

servo/riter*

SELF-BALANCING POTENTIOMETRIC RECORDERS

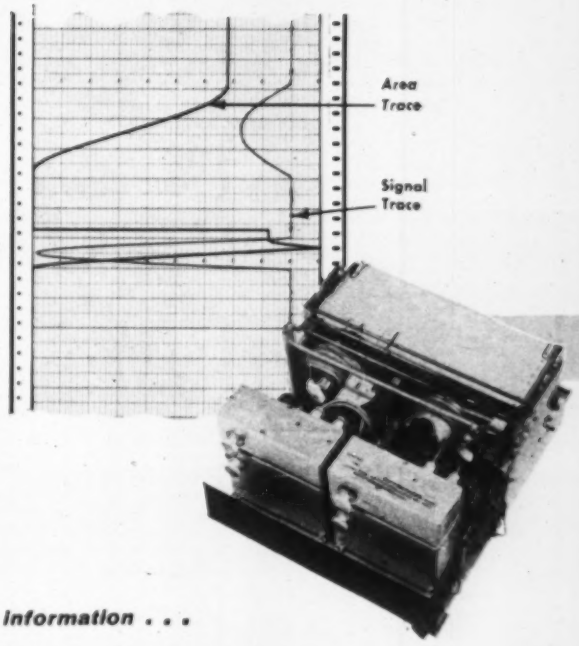
...and introducing the new
T/I INTEGRATING RECORDER

Accurate, quantitative analysis of *any variable* that depends on the precise measurement and integration of the curve may be obtained with the TI Integrating Recorder. The integrator channel, installed as a second channel in a standard wide-grid, single-channel *servo/riter* recorder, consists of a special potentiometer-amplifier-servo arrangement and activates an "area trace" automatically and simultaneously with the signal trace.

Five different maximum count rates are readily obtained through an adjustable gear system up to a maximum of 40,000 area counts per minute. The counting rate linearity is ± 0.5% of full scale.

Note that the integrating signal utilizes the full chart scale to provide faster, easier reading. You may reset the pen to either margin between each peak or at the start of each integration for easier interpretation. The integrating circuit may be set to any assumed zero point in the span of the recorder signal.

The new TI Integrating Recorder is particularly oriented toward gas chromatography applications and has more speed and operating flexibility than any other integrating recorder.



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INSTRUMENTATION GROUP OF

TEXAS INSTRUMENTS
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GEOSCIENCES & INSTRUMENTATION DIVISION
3609 BUFFALO SPEEDWAY • HOUSTON 6, TEXAS

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CIRCLE 168 ON READER-SERVICE CARD

RECORDERS, Magnetic Tape

Airborne Instr Lab
American Electronics Inc
Ampex Corp
Ampex Data Products
Bendix Computer Div
BJ Electronics
Borg-Warner Controls
Burroughs Corp
Camera Equipt Co
Consol Electrodynamics
Electronic Associates
Ercona Corp
General Devices
Genesys Corp
Geotechnical Corp
Gordon Enterprises
Gulton Industries
Heath Co
Instrument Corp of Fla
Intl Radio and Elx
Leach Corporation
Librascope Div
Magnasync Corp
Magnasync Mfg Co
Micronics Div
Midwestern Instrs
M-H Industrial Systems
Packard Bell
Philco Corp
Potter Instr Co
Precision Instr Co
RCA Defence Electronic
RCA Systems Support
Precision Instrument Co
Radiaphone Co
Sangamo Electric Co
Southwestern Indus Elx
Stavid Div
Technitrol Engrg
Telectro Industries

RECORDERS, Multipoint

Alden Electronic
Atkins Technical Inc
Automatic Timing & Contls
Barber-Colman
Bristol Co
Burroughs Corp
Century Elx & Insts
Consol Electrodynamics
Crump Instrument
Daystrom/Weston
Dickson Co
Electro-Autosizing
Electro Instruments
Electro-Logic Corp
Electronic Associates
Foxboro Company
General Devices
GE Apparatus Sales Div
General Railway Signal
Gilmore Industries
Industrial Instrs Inc
Keinath Instr Co
Larson Instrument
Leeds & Northrup
M-H Brown Instrs Div
Offner Electronics Inc
Princeton Div
Republic Flow Meters
Research Appliance Co
Schaevitz Engineering
Seiscor Div
Shaw Instr Corp
Taylor Instrument
Westronics Inc

RECORDERS, Strip Chart (see also the Object of Measurement)

Airborne Instr Lab
Alden Electronic
Allegany Instrument
American Optical Co
Annis Co R B
Atkins Technical Inc
Automatic Timing & Contls
B and K Instruments
Barber-Colman
Bristol Co
Brush Instruments Div
Burroughs Corp
Century Elx & Instrs
Consol Electrodynamics
Curtiss Wright
Daystrom/Weston
Electric Tachometer
Electro-Autosizing
Electronic Associates
Engis Equipment
Esterline-Angus
Fischer & Porter Co
Foxboro Company
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Geotechnical Corp
Gerber Scientific Inst
Gilmore Industries
Industrial Instrs Inc
Larson Instrument
Leeds & Northrup
Manning Maxwell & Moore
Massa Div
Midwestern Instrs
M-H Brown Instrs Div
Moore Products Co
Moseley Co F L
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Offner Electronics Inc
Photron Instr Co
Princeton Div
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Sanborn Company
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Sparling Equipment Div
Stoelting Co C H
Standard Instrument
Swartwout Div
Systron Corp
Systron-Donner
Taylor Instrument
Techni-Rite Elx
Texas Instruments Inc
United Electric Controls
Varian Associates
WE-Instr & Control Sys
West Instrument
Westinghouse Electric
Westronics Inc
Wheelco Instruments Div
Yellow Springs Instr

RECORDING HEADS

Airborne Instr Lab
Alden Electronic
Ampex Corp
Ampex Data Products
BJ Electronics
Borg-Warner Controls
Elcor Div
Ercona Corp
General Ceramics
Genesys Corp
Houston Instrument
Kearfott Div
Laboratory for Electronics
Librascope Div
Magnasync Mfg Co
Micronics Div
Midwestern Instrs
M-H Industrial Systems
Monroe Calculating Mach
Monroe Electronics Div
RCA Systems Support
Robins Industries
Southwestern Indus Elx
Stavid Div
Telectro Industries

TAPE, Magnetic Recording

Accurate Specialties
Ampex Corp
Ampex Data Products
Ampex Magnetic Tape Pro
Audio Devices
Consol Electrodynamics
Crump Instrument
Gordon Enterprises
Minnesota Mining & Mfg
RCA Defense Electronic
Reeves Soundcraft
Telechrome Mfg Corp
Telectro Industries

TELEGRAPHY, Automatic, including Reperforators, Tape Transmitters, Teleprinters, Teletypers

Atlantic Research
Borg-Warner Controls
Daystrom/Weston
Editape Co
Electronic Controls Inc
Ferranti Electric
Intelex Systems Inc
Lynch Communication
P and H Electronics
Stelma Inc
Stromberg-Carlson San Diego
Tally Register Corp
Telechrome Mfg Corp
Tele-Dynamics Div
Teletype Corp
Western Apparatus Co

When Using This Guide look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

WHENEVER

you need buying data on any instruments or devices for measurement, inspection, testing, analysis, computing, and automatic control

LOOK IT UP
IN THE GUIDE

and please mention the *1961 Instruments & Control Systems Buyers' Guide* when ordering or seeking information.

IF

you are seeking a rare or exotic instrument not listed in the Guide, refer your problem to I&CS Reader Service Department, 845 Ridge Ave., Pittsburgh 12, Penna.

Electrical and Electronic Instruments

1961 BUYERS' GUIDE

3

ELECTRICAL AND ELECTRONIC MEASURING
AND TESTING EQUIPMENT
FOR PRODUCTION, BENCH, PANEL, AND
OEM APPLICATION—FROM AMMETERS
TO X-Y RECORDERS

Only

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PRECISION METERS

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BETTER THAN

1/4% ACCURACY

...DESIGNED-IN, CONSTANT, GUARANTEED

Greibach-patented Bifilar no-friction movement and weightless light beam pointer use no pivots, no jewels, no hairsprings, no amplifiers. Greibach meters start with near-perfect accuracy. Accuracy is ***unaffected even by overloads of 100,000%*** (to 125,000,000% in some cases). Rugged, shock-proof design cradles the coil; withstands up to 500 G's. There's nothing to wear, vary or age with use, so accuracy remains high over long periods. Most meters leave our plant with measured accuracy of better than 1/10%.

OTHER EXCLUSIVE GREIBACH PRECISION METER FEATURES:

- Sensitivity to 0.2 μamp. full scale
- Resistance to 1/300th of conventional meters
- Energy drain as low as 4×10^{-10} watt
- No parallax errors from any reading angle
- Multpile Ranges—up to 23 in one meter.

The secret of Super-Precision Performance is in this cartridge, containing unique Bifilar Suspension.

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GREIBACH INSTRUMENTS CORPORATION

331 North Ave., New Rochelle, N. Y.
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CIRCLE 169 ON READER-SERVICE CARD

AMMETERS, AC and/or DC, Single or Multi-range, Indicating, Clamp Type, Contact-making, Laboratory Standard, Recording, Split Core

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Beckman/Helipot Div
Beede Electrical Instr
Bristol Co
British Industries
Bruno-New York Inds
Columbia Electric
Curtiss Wright
Daystrom/Weston
Dejur Amsco
Dittmore-Freimuth
Electric Dev & Mfg
Epic Inc
Esterline Angus
Federal Pacific
GE Apparatus Sales Div
Greibach Instrument
Hewlett-Packard
Hickok Electrical Instr
Ideal Precision Meter
International Instr
Martindale Electric
Mastercraft Instr Co
Meters Inc
M-H Marion Instr Div
Natl Electronics (Wyo)
Pace Electrical Instrs
Parker Electronics
Philco Corp
Physics Research Labs
Precision Apparatus Co
Princeton Div
Pyramid Instr Corp
Q V S Inc
Rawson Electrical Instr
Rochester Mfg Co
Sanborn Company
Sangamo Electric Co
Shallcross Mfg Co
Simpson Electric
Southwestern Indus Elx
Sticht Co Herman
Sunshine Scientific
Technique Associates
Texas Instruments Inc
Triplett Electl Instr
Volton Products
Wac Line Inc
Waters Mfg Inc
WE-Instr & Control Sys
Welch Mfg Co W M
Westinghouse Electric
Yokogawa Electric Works

AMMETERS, Microammeters and Milliammeters

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B and K Instruments
Beckman/Helipot Div
Beede Electrical Instr
British Industries
Burton-Rogers
Curtiss Wright
Daystrom/Weston
Dejur Amsco
E-H Research Labs
Elcor Inc
Electric Dev & Mfg
Electro Metric Co
Electronic Instrument
Epic Inc
Esterline Angus
Federal Pacific
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Greibach Instrument
Halex Inc
Heath Co
Hewlett-Packard
Hewson Co Inc
Hickok Electrical Instr
Ideal Precision Meter
International Instr
Leeds & Northrup
Martindale Electric
Mastercraft Instr Co
Meters Inc
Millivac Instr Div
M-H Marion Instr Div
Natl Electronics (Wyo)
Page Electrical Instrs
Parker Electronics
Phaostron Instr & Elx
Philco Corp
Physics Research Labs
Precision Apparatus Co
Princeton Div
Q V S Inc
Quan-Tech Labs
Rawson Electrical Instr
Simpson Electric
Smith-Florence Inc
Southwestern Indus Elx
Sunshine Scientific
Telectro Industries
Texas Instruments Inc
Triplett Electl Instr
Victoreen Instrument Co
WacLine Inc
Waldom Electronics
WE-Instr & Control Sys
Welch Mfg Co W M
Westinghouse Electric
Yokogawa Electric Works

AMPEREHOUR METERS

Hickok Electrical Instr
Landis & Gyr
Philco Corp
Sangamo Electric Co
Shallcross Mfg Co
Simpson Electric
Telectro Industries

AMPLIFIERS, Audio Frequency, Chopper, DC, LOGARITHMIC, Magnetic, including Saturable Reactors; Miscellaneous, including Geophysical, Nucleonic, Strain-gage Oscillograph, etc., Servo, Wideband

ACDC Electronics Inc
Acro Products Co
Acromag Inc
Acton Laboratories
Adage Inc
Adler Electronics
Advanced Instruments
Advanced Research
Aerovox Corp
Airborne Accessories
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Automation Dynamics
Autotron Inc
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Behlman Engineering
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Beva Laboratory
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Boensbaft and Fuchs
Boonton Electronics
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Bulova Watch Co
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Calif Magnetic Control
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Centralab Div
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Chesapeake Instr
Chicago Std Transformer
Coast Coil
Collins Radio
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Control Technology
Cooper Development
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Detroit Controls
Dian Laboratories
Di/An Controls
Diatron Inc
Diehl Mfg Co
DJECO
Donner Scientific
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Eldorado Electronics
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Electrodynamic Instr
Electro-Mechanical Res
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Electronic Controls Inc
Electronic Dev Corp
Electronic Instrument
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General Magnetics
General Mills Inc
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Geotechnical Corp
Goslin Electric
GPE Controls
Gulton Industries
Gyra Electronics
Gyrex Corp
Hagan Chem & Controls
Halex Inc
Hamilton Standard Div
Hamner Electronics
Hays Corporation
Heath Co
Hewlett-Packard
Holt Instrument Labs
Hoover Electronics
Houston Instrument
Hydel Inc
Industrial Control Co
Industrial Measurements
Industrial Test Equip
Infrared Industries
Instrument Laboratories
Instruments Inc
Instrs for Industry
Interelectronics
Jerrold Electronics
Kaiser Aircraft & Elx
Kay Electric
Kearfott Div
Kelvin Electric
Kollsman Instr Corp
Jordan Controls
Land-Air Inc
Leach Corporation
Leeds & Northrup
Lel Inc
Librascope Div
Ling Electronics
Lumen Inc
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Mallory & Co P R
Maurer Inc J A
Maxson Corp W L
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Microwave Associates
Midwestern Instrs
Miligo Electronic
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M-H Boston Div
M-H Brown Instrs Div
M-H Hetland Div
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Motorola Military Elx
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Neff Instr Corp
Networks Elx Corp
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Nortronics Electronics
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Norwood Controls
Nuclear Corp of Amer
Nuclear Elx Corp
Offner Electronics Inc
Oilgear Co
Optimized Devices
Ovitron Corp
P and H Electronics
Pacific Instrument Co
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Pegasus Labs
Penn-East Engrg Corp
Perkin Engrg Corp
Philbrick Researches Inc
Philco Corp
Photron Instr Co
Physical Sciences Corp
Pickard & Burns
Picker X-Ray Corp
Polyphase Instr Co
Power-Tronic Systems
Quan-Tech Labs
RCA Defense Electronic
R S Electronics Corp
Radiaphone Co
Radiation Counter Labs
Radiation Electronics
Radio Frequency Labs
Ramm Rectifier Co
Raytheon/Comm Apparatus
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Rese Engrg Inc
Research Council Inc
Rixon Electronics
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Servo Systems Co
Servo-Tek Products
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Sig-Trans Inc
Solid State Electronics
Sonex Inc
Southwestern Indus Elx
Specialties Inc
Spectra Electronics
Spectrol Electronics
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HIGH GAIN RELAY AMPLIFIER

Extreme Sensitivity — Exceptional Stability

The Thermo Electronic amplifier is ideal as a component in your monitoring, auto-control, or high-speed "go no-go" quality control systems. It will recognize a dc signal, convert to ac, and amplify to actuate its master relay. Operating characteristics are maintained even with fluctuating power supply, electrical interference and high external input resistance. Built-in fail-safe. Standard components easily replaced.

Sensitivity 1 mu V—Stability ± 1 mu V
Power gain 135 db.—Response time 0.3 sec. max. Operating power 115 v. (± 10) 50-60 cps. Wt. 6.5 lbs.—Dim. 4½" x 3¾" x 6"

Servo Amplifiers with similar specifications also available. Write today for Bulletin 90 FF.

Thermo Electric Co. Inc.

SADDLE BROOK, NEW JERSEY

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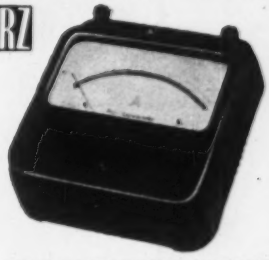
Thermo Electric (Canada) Ltd., Brampton, Ont.

CIRCLE 170 ON READER-SERVICE CARD

Physics Research Laboratories Inc.

"House of Fine Instruments"



MOVING COIL INSTRUMENTS FOR A.C. AND D.C.

• A wide range of millivoltmeters, voltmeters, microammeters, ammeters for D.C. • Voltmeters and milliammeters for A.C. • Accuracy for D.C. instruments 0.5%; for A.C. 1.5%. • Accessories to extend ranges. • Compact • Inexpensive.

PRECISION MOVING IRON INSTRUMENTS FOR A.C. AND D.C.

• Voltmeters milliammeters, ammeters. • Accuracy. for A.C., 0.5%; for D.C., 1.0%. • Both A.C. and D.C. • Frequencies up to 500 cps and 1000 cps.

PRECISION ELECTRODYNAMETER WATTMETERS

• Single phase and three-phase, 3 wire and 4 wire. • Frequency to 1000 cps • Accuracy 0.5%.

UNIVERSAL MULTI-RANGE INSTRUMENTS

• Famous Goerz AC/DC voltage–current instruments. • Accuracies as high as 1.0% on D.C. • Cut-out overload protection. • Accessories to extend ranges. • Dust-proof, moisture-proof. • Resistance • Capacitance • Temperature Measurements • Up to 48 ranges.

PRECISION AMMETERS AND VOLTMETERS FOR A.C. AND D.C.

• Wide selection of ammeters and voltmeters. • Both A.C. and D.C. • Accuracies of 0.2% on A.C.; 0.5% D.C. • Range selection switch. • Calibration certificate with each instrument. • Up to 1500 volts with accessories.

MOVING COIL D.C. STANDARDS

• Wide selection of voltmeters, millivoltmeters, microammeters, milliammeters. • Accuracy of 0.2%. • Special 12-range millivolt-voltmeter and 11-range milliammeter-ammeters, also 0.2%. • Accessories to extend ranges. • Calibration certificate with each instrument.

ELECTRODYNAMIC PRECISION STANDARDS

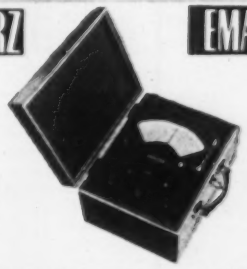
• Voltmeters, ammeters, milliammeters, wattmeters, power-factor meters. • Accuracy 0.2% on all but power-factor meters. • Frequencies to 1000 cps, 1600 cps and 2500 cps. • Calibration certificate with each instrument.

LABORATORY PRECISION D.C. STANDARD

• Millivoltmeter, millivolt-voltmeter, voltmeter. • Up to 1500 volts with accessories, up to 300 amperes with accessories. • Accuracy of 0.1%. • Transverse scale with mirror. • Calibration certificate.

HIGH SENSITIVITY GALVANOMETERS, MILLIVOLTMETERS AND MICROAMMETERS

• Famous Goerz double-light spot galvanometers. • 21-range light spot DC universal instrument.



PRECISION MULTI-RANGE A.C. AMMETER

• 8 ranges: 0.2-0.5-1-2-5-10-20-50 amperes. • Accuracy of 0.2%. • Range selector switch. • Shielded against stray fields. • Calibration certificate.

MEGOHMMETERS

• Up to 10,000 megohms. • Accuracy 1.0%. • Completely self-contained. • Instructions on front plate. • Models for operation on 220 VAC line voltage. Combination megohmmeters and earthtesters.

MINIATURE WHEATSTONE BRIDGE

• 1.0 to 350,000 ohms. • Accuracy of 1.0%. • Folds into package 5" x 4" x 3", has own carry strap. • 2.5×10^{-4} ampere galvanometer. • Range up to 1.0 megohm with external resistor.

POWER CIRCUIT ANALYZER

• 9 current ranges from 150 ma to 60 amp., may be extended up to 13 with plier-type transformer. • 4 voltage ranges, up to 600 volts. • Active power; 9 watts to 900 KW (with transformer.) • Reactive power; 9 VAR to 900 KVAR (with transformer.) • Power factor; 0-1, capacitive and inductive. • Frequency; 57-63 cps. • Light weight.

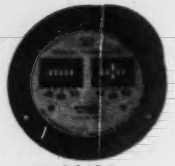
OUR GOERZ CATALOG COVERS DETAILED INFORMATION OF ALL OUR FINE PRECISION INSTRUMENTS

FOR OPTICAL EQUIPMENT: GOERZ AMERICAN OPTICAL CO., INWOOD L.I., N.Y.

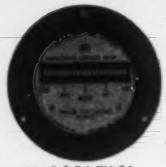
P.O. Box #555 Hempstead, L. I., N. Y. IVanhoe 3-8299

CIRCLE 171 ON READER-SERVICE CARD

REED FREQUENCY METERS • ELAPSED TIME METERS
TOGGLE, LEVER and ROTARY SWITCHES of Instrument and Test Equipment Quality
for THE ELECTRONIC INDUSTRY



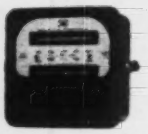
Model 30-F
Dual Range, Double Window



Model 36-FX-21
21-Reed Meter in 3½" Case

Model 31-ES

Model 21-EPL



Model 41-FX-42
300—500 cycles and
380—420 cycles, 4" case.

Model 15-FHAC
2-Reed in 1½" Sealed Case

Model 31-EHXX

ST27N

MS33058-21

MS33059-27

MS25068-27

VIBRATING REED FREQUENCY METERS

Meters illustrated are used wherever constant or known frequency is important to efficient operation of equipment.

- *Permanently Accurate* within ±0.3% or better at reference temperature, depending on the model. This accuracy is not affected by poor wave form, external magnetic disturbances, or voltage fluctuations.
- *Size and Type for Every Service.* Made in many portable and panel styles and reed groupings; 12-650 cycles and above.
- *Rugged Construction* of simplified, patented design, with no moving parts to wear out or get out of calibration.
- *Suitable for Electronic Circuits.* Power consumption is comparatively low, and J-B-T reeds have high Q with prompt, sharp response.

3½", 2½" and 1½" SEALED Types

3½" FHXX Meters, sealed glass-to-metal construction with solder terminals, meet or exceed the sealing, mounting and electrical requirements of JAN-I-6 and MIL-M-6A, including the 3000 volt breakdown. Barrel diameter, 2 11/16"—overall depth behind flange, 2⅜"... New 2½" Models 21-FHXX and 23-FHXX now are cataloged... The 1½" Sealed Size is illustrated by Model 15-FHAC, above, 60 and 400 cycles, 2 reeds, 8-10 volts, for cathode follower circuits as in standardizing output of audio oscillators... also 15-FH Series, 5 reed, 58-62 cycles, 100-130 volts, or 390-410 cycles, 110-130 volts. Barrel, 1½" dia., detachable flange, 2.094" dia., solder terminals.

OTHER REED PRODUCTS

Reed Tachometers — read rpm by resonance alone—no electrical or mechanical connections. Indicator is mounted or held against housing of turbines, electric shavers, vacuum cleaners, sewing machines, etc.

Reed Relays — Made in plug-in cans for selective frequency calling, or single-reed types for response to a transmittal signal, such as 100-500 cy. A patented J-B-T type with no vibrating contacts, makes a reed indicating meter into a frequency limit control.

Oscillator Controls — Plug-in reed-type match transmitted frequencies to vibrating reed relays for mobile communications equipment.

BUYING THROUGH DISTRIBUTORS

Purchase of standard items through authorized electronic distributors is strongly recommended. This method saves you time, cost of stocking inventory, and transportation charges.

ELAPSED TIME METERS

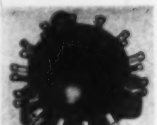
For maintenance, tube life, or test time records, J-B-T elapsed (or running time) meters provide valuable information about new or existing equipment. Model 31-ES in 3" rectangular molded case (illustrated) registers in 1/10 hour steps to 9,999.9 hours, then resets automatically. Most popular, Model 31-EX, with 3½" rounded case, normally is stocked for 60 cycles, 100-130 volts. Variations such as 50 cycles, 230 volts, 0-99,999 hours, or 0-9,999.9 minutes are available. Newest in design, Model 21-EPL (illustrated) provides a clear-plastic front 2 11/32" wide x 2⅜" high, having 2⅛" diam. metal barrel behind panel, Print SK-102, compatible with all modern instruments.

SEALED ELAPSED TIME METERS

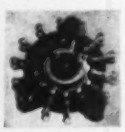
60 or 50 cycle, Model 31-EHXX, same as 31-EX above but fully sealed, with glass-to-metal construction solder terminals, and 3½" detachable flange to match XX metal frequency meter case. 1000 volt break-down... Model 21-EHXX, 2½" sealed 60 cycle meter has full size counter... *400 cycle,* Model 33-EHXX, 110-125 volts, has same sealed construction, but 2¾" barrel dia., 4" deep behind panel.

ROTARY SWITCHES

For dependable performance in quality test equipment, instruments, inspection setups, and avionics, J-B-T makes 4 space-saving types—*14 positions:* 2 7/32" dia. MS-14 molded series, and 2" dia. SS-14 laminated series; *20-positions:* 2⅝" dia. MS-20 molded series, and 2 23/32" dia. SS-20 laminated. 1 to 6 decks (more on special order), shorting or non-shorting. Conservatively rated 1 amp., 125 volts AC, inductive load; maximum momentary, (not make and break) 5 amp. Maximum voltage between contacts, 1500 volts R.M.S.; between decks and ground, 2000 volts R.M.S. Average contact resistance is 0.007 ohms or less.



MS-14 MOLDED



SS-14 LAMINATED

ASK FOR CATALOG 558-E

TOGGLE SWITCHES AN, JAN, or MIL

More than 140 models of exceptional-quality toggle switches, all designed for Government specifications, now are manufactured by J-B-T. The heavy-duty models feature solid coin-silver contacts, unique to J-B-T, which add overload protection and keep contact resistance under .005 ohms. Nominal ratings are 20 amp. at 125 VAC, 10 amp. at 250 VAC, unless otherwise indicated.

ST40, 42, 50, 52 series—Single-pole and double-pole, heavy-duty, for JAN-S-23, MIL-S-21195A (Ships), and Ordnance Standards DDAX. Solder and screw terminals.

MS25058, 25059 series—Lever seal for sand, dust, and 15 ft. water submersion tests; single-pole, double-pole, heavy-duty for MIL-S-3950A (significantly modifying MIL-S-3950). Specification covers screw terminals with solderable finish.

MS25068 series—Four-pole, with lever seal, heavy-duty types; 8 models for MIL-S-3950A. Screw terminals with solderable finish.

AN3021, 3027 series—Aircraft types with lever seal, single-pole and double-pole, heavy-duty, for MIL-S-6745. Screw terminals.

ST12, 13, 16, 17, 22, 23, 26, 27 series—Medium-duty types, for JAN-S-23, MIL-S-21195A (Ships), Ordnance Stds. DDAX. Double-grip, self-cleaning contacts; current-carrying parts heavily silver-plated. Threaded bushings are 3/8-24 or ¼" long; solder terminals, rear or side-connected. Nominal rating 6 amp., at 125 VAC 3 amp., 250 VAC.

MS25098, 25100 series—Medium-duty types, single-pole, double-pole, for MIL-S-3950A, with lever seal for sand, dust, and 15 ft. water submersion tests. Threaded bushings 3/8-24", solder terminal connections at rear. Nominal rating 6 amp. at 125 VAC, 3 amp. 250 VAC.

Design Note—MIL-S-3950A is the latest and most comprehensive specification. It ultimately is expected to supplant most of the other specifications.

For further technical information, please request Bulletin TS-68.

SUB-MINIATURE SWITCHES

J-B-T also manufactures a complete line of 12-position, 1" nominal sub-miniature rotary switches, interchangeable with the series 7000 and 5000 switches formerly made by International Instruments, Inc.

These switches are designed for use in low current applications such as in test equipment, geophysical and airborne equipment, and in miniaturized electrical and electronic devices where space and weight are important, and performance requirements are high. Series 7000 provides a full 12 live switching contacts per deck through a unique wafer design deck with rotor contacts and live switching contacts on opposite sides of deck; series 5000 provides nearly twice the switching capability per deck through the same patented wafer design with 12 contacts on opposite sides of each deck.

Materials and workmanship are of highest quality. Available for continuous rotation; with internal stops; spring return; shorting and non-shorting; lever action; single or multiple deck. For full data please request Bulletin RS-11.

J-B-T INSTRUMENTS, INC. NEW HAVEN 8, CONN.

CIRCLE 172 ON READER-SERVICE CARD

Electronic Circuitry for Instruments and Equipment

by M. H. Aronson. "Comprehensive source book on instrument circuitry," this complete home-study text includes 458 multiple-choice questions (and answers), 215 illustrations, 10 tables, comprehensive index. Paperbound, 324 pages, 1957 (revised edition). **$2.00**

100 Electronic Circuits

by M. H. Aronson and C. F. Kezer . . . covers amplifiers, oscillators, pulse circuits, phase shifters, etc. Complete with all circuit component values and response specifications. Paper, 180 pages, 1957. **$2.00**

Printed Circuitry

by Allan Lytel. A valuable working tool; includes alternative and recommended practice for each step in design and production of printed circuits; a buyer's guide to special components; and "how to" service data. Paperbound, illustrated, 192 pages, 1957. **$2.00**

Maintenance and Servicing of Electrical Instruments

by James Spencer. Useful to all instrument users: service men, switchboard attendants testing engineers, and others, this book covers construction, testing, applications, principles of operation and maintenance of all kinds of electrical indicating instruments. Clothbound. 274 illustrations. 280 pages, 1951 (third edition). **$2.00**

Strain Gage Instrumentation

edited by Aronson and Nelson. ". . . a practical text . . . covers fundamentals, basic bridge circuits, typical applications, and surveys typical commercial instruments which use or are used with strain gages." Paper, 110 pages, illustrated, indexed by company, author, and subject, 1958. **$2.00**

Nuclear Reactors for Industry and Universities

edited by E. H. Wakefield. The several distinguished authors and editor Wakefield cover types, availability (1954), operation, protection, control, experiments, legal aspects, and present a detailed cost study. Cloth, 92 pages, illustrated, 1954. **$2.00**

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Tele-Dynamics Div
Tel Instrument Elx
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Tracerlab Inc
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United Control Systems
Universal Match
Universal Toroid Coil
Vari-L Co
Varo Mfg Co
Vickers Electric Prods Div
Viking Industries
Virginia Electronics
Vol-Shaw Electronics
Waber Electronics
Westamp Inc
WE-Director Systems
Westinghouse Electric
Westronics Inc
Wheeler Electronic
White Avionics Corp
Wickes Engrg & Constr
Wurlitzer Co

AUDIO-FREQUENCY EQUIPMENT

Aerovox Corp
Airborne Instr Lab
Allied Radio
Altec Lansing Corp
Audio Instrument Co
Bruno-New York Inds
Chadwick-Helmuth
Clegg Labs
Clough Brengle
Computer Measurements
Control Electronics
Convair Instruments
Dukane Corp
Dymec Inc
Dytronics Co
Electronic Applications
Electronic Instrument
Electronic Mamts Corp
Electronics International
Gates Radio Co
General Radio
Gyrex Corp
Hamilton Standard Div
Heath Co
Hewlett-Packard
Industrial Test Equip
Instrs for Industry
Interelectronics
Kay Electric
Land-Air Inc
Ling Electronics
Measurements Div
Midwestern Instrs
Muirhead Instrs Inc
P and H Electronics
Pacific Transducer Corp
Packard Bell
Philco Corp
RCA Defence Electronic
Radio Frequency Labs
Research Council Inc
Riverbank Labs
Scott Inc H H
Southwestern Indus Elx
Spectrum Instruments
Stelma Inc
Sterling Precision
Stromberg-Carlson Co
Telechrome Mfg Corp
Telectro Industries
Telonic Engineering
Varo Mfg Co
Versitron Inc
Virginia Electronics
Wickes Engrg & Constr
Winston Electronics

BRIDGES, Balancing and Calibrating Manual; AC Electrical, Capacitance; Electrical, Conductivity; DC; Hooges; Impedance; Electric Inductance; Kelvin; Limit; Magnetic; Power-Factor; Strain Gage; Vacuum Tube; Wattmeter; Wheatstone

Acton Laboratories
Airborne Instr Lab
Allegany Instrument
Allied Radio
Amer Meas & Control
Anadex Instruments Inc
Arnoux Corp
Astra Technical Instr
Automatic Control Co
B & F Instruments
B and K Instruments
Baldwin-Lima-Hamilton
Barnes Development Co
Biddle Co James G
Boonton Electronics
Bristol Co
British Industries
Bruno-New York Inds
Budd Co Inst Div
Bulova Research
Cambridge Instrument
Canadian Marconi
Century Elx & Instrs
Clegg Labs
Clough Brengle
Communication Meas Lab
CompuDyne Corp
Consol Electrodynamics
Corbett Science Labs
Curtiss Wright
Decker Corp
Designs for Tomorrow
Electro Impulse Lab
Electro Instruments
Electro Metric Co
Electro-Measurements
Electronic Applications
Electronic Instrument
Electronic Mamts Corp
Ellis Associates
Epic Inc
Eppley Laboratory
Erdco Engineering
Fluke Mfg Co
Freed Transformer
GE Apparatus Sales Div
General Radio
General Resistance
Gray Instrument
Hagan Chem & Controls
Harris Transducer
Heath Co
Hewlett-Packard
Indus Instr Auto
Industrial Instrs Inc
Industrial Test Equip
Julie Research Labs
Kahn & Co
Kearfott Div
Leeds & Northrup
Magnetic Instr Co
Marconi Instruments
Measurements Research
Micro-Test Inc
Midwestern Instrs
Millitest Corp
Millivac Instr Div
M-H Heiland Div
M-H Rubicon Instrs Div
Model Engrg
Muirhead Instrs Inc
Nucimco Products
Narda Corp
Norwood Controls
Optimized Devices
Philco Corp
Physics Research Labs
Pimex Inc
Polyphase Instr Co
Princeton Div
Ramapo Instr Co
Reliance Instr Mfg
Rinco Inc
Rohde & Schwarz
Rosemount Engrg Co
Ruge Associates
Sensitive Research Instr
Servonic Instruments
Shallcross Mfg Co
Sierra Electronic Corp
Simmonds Precision Prods
Smith-Florence Inc
Southwestern Indus Elx
Special Instruments Lab
Statham Instruments
Stiehl Co Herman
Sunshine Scientific
Transformers Inc
Ultronix Inc
Ttechnics Inc
Waters Mfg Inc
Welch Mfg Co W M
Westronics Inc
Winslow Company Inc
Yokogawa Electric Works

CAPACITANCE INDICATORS

Acton Laboratories
Aeronaut & Instr Div
Aerovox Corp
Allied Radio
Barnes Development Co
Caecun Inc
Cubic Corp
Daystrom/Weston
Eder Engrg
Electro Instruments
Electronic Applications
Electronic Mamts Corp
Epic Inc
Foxboro Company
Gulton Industries
Heath Co
Industrial Instrs Inc
Instruments Inc
Kahn & Co
Muirhead Instrs Inc
Photobell Co
Rohde & Scharz
Security Controls Inc
Simpson Electric
Southwestern Indus Elx
Tektronix Inc
Telectro Industries
Trimount Instrument Div
Western Electronic Prods

CIRCUIT ANALYZERS, Industrial

Airborne Instr Lab
Automation Dynamics
Calif Technical Indus
Daystrom/Weston
Dit Mco Inc
Electro Instruments
Erdco Engineering

BRIDGES ELECTRICAL

- AC & DC
- CONDUCTIVITY
- IMPEDANCE
- KELVIN
- LIMIT
- WHEATSTONE
- AUTO-BRIDGE
- SCHERING-BRIDGE

Write for complete catalog

Industrial Instruments Inc.
89 Commerce Road Cedar Grove Essex County N J

CIRCLE 173 ON READER-SERVICE CARD

CONDUCTIVITY METERS

- Laboratory Conductivity Bridges—Type RC
- Solu-Bridge—Type RD
- Solu-Bridge Controller—Type RE
- Self-balancing Indicator-Controller—Type RI
- Solu-Meter—Direct Reading Indicator—Type RA
- Portable Conductivity Recorder—Type RQ

Write for complete catalog

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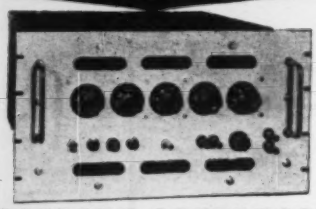
CIRCLE 174 ON READER-SERVICE CARD

NORTH HILLS'



CURRENT GOVERNOR

Model CS-11

for *Constant Current*

- Precision Current Source
- Gyro Torquer Supply
- Transistor and Diode Tester

▸ High Accuracy ▸ Excellent Stability ▸ Programmable

For testing and measurement of gyros, transistors, diodes, clutches, solenoids, meters, other current sensitive devices.

- Current Range is 1μa to 100 ma with 5 decades — digital in-line readout —
- Regulation and stability 0.002% —
- Accuracy 0.02%

In use by leading companies for gyro torquer supply, transistor avalanche test, diode PIV test, clutch testing, calibration.

Literature describing this and other constant current sources from 0.1μa to 30 amp. may be obtained from

nh | NORTH HILLS ELECTRONICS, INC.
402 SAGAMORE AVE., MINEOLA, N.Y. Pioneer 7-0333

CIRCLE 175 ON READER-SERVICE CARD

DECADE BOXES
(Resistance-Capacitance)

RESISTANCE

Decade steps from 0.1 to 1 megohm.

Three through seven dial models.

Accuracy: ± 0.25% on 0.1 and 1 Ohm steps; ± 0.1% on all others.

CAPACITANCE

Decade steps from .0001 through 1.0 mfd. Low zero capacitance, approximately 35 mmf. Available in 5 models.

Industrial Instruments Inc

CIRCLE 176 ON READER-SERVICE CARD

Federal Pacific
General Mills Inc
Gulton Industries
Hamilton Standard Div
Haydon Co A W (Calif)
Heath Co
Industrial Instrs Inc
Instrument Laboratories
Lavoie Labs
Optimized Devices
Panellit Inc
Pearce-Simpson Inc
Peschel Electronics
Philco Corp
Physics Research Labs
Precision Apparatus Co
Robotomics Inc
Simpson Electric
Utechnics Inc

CIRCUIT BREAKER ANALYZERS

Electro Instruments
Electron Arc
Federal Pacific
Gulton Industries
Link Div
Mechanical Products Inc
Multi-Amp Electronic
Philco Corp

CIRCUIT TESTERS, Including Radio Set Analyzers, Continuity Testers, etc. (see also Cable Testers-Cat. 4)

Airborne Instr Lab
Allied Radio
Ameleo Inc
Associated Research
Automation Dynamics
British Industries
Calif Technical Indus
Canadian Marconi
Clegg Labs
Concord Control Inc
Cooper Development
Curtiss-Wright
Davenport Mfg
Dagstrom/Weston
Diamond Power Specialty
Dit Mco Inc
Eastern Specialty Co
Eder Engrg
Electro Instruments
Electronic Engrg Co Calif
Electronic Instrument
Electronic Mamts Corp
Erdco Engineering
Federal Pacific
General Cement
Gordon Enterprises
Gray Instrument
Gulton Industries
Haydon Co A W (Calif)
Heath Co
Hickok Electrical Instr
Hoover Electronics
Ideal Industries
Industrial Instrs Inc
Instrument Laboratories
Kingston Industries
Laboratory for Electronics
Lavoie Labs
Link Div
Martindale Electric
Measurements Research
Microloc Corp
Nati Electronics (Wyo)
North Electric Co
Opad Electric Co
Optimized Devices
Pearce-Simpson Inc
Peschel Electronics
Philco Corp
Precision Apparatus Co
Princeton Div
RCA Defense Electronic
RCA Systems Support
Reco Electronics
Sel-Rex Corp
Shallcross Mfg Co
Simpson Electric
Slaughter Co Inc
Southwestern Indus Elx
Strand Engrg Co
Sunshine scientific
Triplett Electl Instr
Van Norman Industries
Winston Electronics
Yokogawa Electric Works

COIL TESTING EQUIPMENT

Aerovox Corp
Barnes Development Co
British Industries
Davenport Mfg
Designers for Industry
Electro Instruments
Freed Transformer
Heath Co
Industrial Instrs Inc
Industrial Test Equip
Kay Electric
Martindale Electric
M-H Rubicon Instrs Div
North Hills Electric
Opad Electric Co
Philco Corp
Reco Electronics
Simpson Electric
Slaughter Co Inc
Sterling Precision
Sunshine Scientific
Universal Mfg Co
Western Electronic Prods

COMMUNICATION MEASURING INSTRUMENTS

Airpax Electronics
Ameleo Inc
Bendix Scintilla Div
CGS Laboratories Inc
Canadian Marconi
Computer Measurements
Dagstrom/Weston
Dittmore-Freimuth
DuMont Labs Allen B
Electro Instruments
Electronic Applications
Federal Pacific
General Communication
General Devices
General Radio
Gulton Industries
Hoover Electronics
Jerrold Electronics
Kaiser Aircraft & Elx
Lampkin Labs
Land-Air Inc
Manson Labs
Marconi Instruments
Measurements Div
M-H Rubicon Instrs Div
Motorola C & E
National Standard Elx
North Electric Co
Northeast Electronics
Packard Bell
Philco Corp
Pickard & Burns
RCA Defense Electronic
Railway Communications
Rixon Electronics
Sensitive Research Instr
Sierra Electronic Corp
Simpson Electric
Spectra Electronics
Stelma Inc
Tektronix Inc
Tel Instrument Elx
Telonic Engineering
Trak Electronics
Trio Laboratories
Virginia Electronics

CONDUCTIVITY METERS

Atkins Technical Inc
Control Circuits Inc
Dagstrom/Weston
Electro Instruments
Hagan Chem & Controls
Industrial Instrs Inc
Industrial Instrs Engrg
Kahn & Co
Leeds & Northrup
Magnaflux Corp
Mast Development
Philco Corp
Waldom Electronics

COUNTERS, Decade, Binary, Electrical Impulse

Abacus Inc
Abrams Instrument
American Tradair
Automatic Electric
Automatic Timing & Contls
Baird-Atomic Inc.
Baranoff & Assocs
Beta Laboratory
Bowmar Instrument
Bulova Research
Burroughs Elx Tube
Cambridge Instrument
Canadian Marconi
Chromo-Log Corp
Computer Measurements
Control Equipment Corp
Dl/An Controls
Digitran Co
Durant Mfg
Dymec
Eagle Signal
Eberline Instrument
Electro Instruments
Electro Precision
Electronic Associates
Electronic Computer Co
Electronic Controls Inc
Engineered Electronics
Erie Resistor
Exline Engrg
Fischer & Porter Co
Freed Transformer
General Devices
GE Heavy Mil Elx Dept
General Nuclear Corp
Gyra Electronics
Hagen Mfg Co
Hamner Electronics
Hathaway Instruments
Haydon Co A W
Haydon Div Gen Time
Hazdon Instrument
Hewlett-Packard
Intelex Systems Inc
Kearfott Div
Laboratory for Electronics
Land-Air Inc
Landis & Gyr
Lavoie Labs
Librascope Div
Link Div
Machinery Electrification
Model Engrg
National Standard Elx
Navigation Computer Corp
North Electric Co
Northeastern Engrg
Nuclear-Chicago
Nuclear Corp of Amer
Nuclear Elx Corp
Nuclear Measurements
Nucleonic Corp of Amer
Oxford Engrg Co
Philco Corp
PIC Automation Cils
Picker X-Ray Corp
Post Electronic
Potter Aeronautical
RCA Systems Support
Radiation Instr Dev Lab
Raytheon/Comm Apparatus
Redford Corp
Rixon Electronics
Robotomics Inc
Selsky Bros Inc
Sigma Instruments
Southwestern Indus Elx
Systron Corp
Systron-Donner
Tech Measurement Corp
Telecomputing Corp
Tempo Instrument
Tracerlab Inc
Transistor Specialties
Trott Electronics
Valor Instruments
Van Norman Industries
Veeder-Root Inc
Vol-Shaw Electronics
Wang Laboratories

CURRENT REGULATORS, including Ballast Tubes

Aerotronic Assoc
Brach Mfg Corp
British Industries
Capitron Div
DJECP
Davenport Mfg
Electric Regulator
Electron Arc
Green Rectifier
Heyl Duty Electric
Hoffman Electronics
North Hills Electric
Interelectronics
North Hills Electronics
Philco Corp
Power Designs
Radiation Research Corp
Tech Apparatus Bldrs
Vickers Electric Prods Div
Westinghouse Electric
Wicken Engrg & Constr
Wiltec Electronics

DECADE BOXES, Resistance, Capacitance, Inductance, etc.

Aerovox Corp
Barnes Development Co
British Industries
Cambridge Instrument
Central Scientific
Clarostat Mfg
Coast Coil
Daven Co
Designs for Tomorrow
Dittmore-Freimuth
Dynetor Mfg
Electro-Measurements
Electronic Applications
Electronic Instrument
Epic Inc
Film Capacitors Inc
Freed Transformer
General Radio
Gilmore Industries
Gray Instrument
Heath Co
Industrial Instrs Inc
Julie Research Labs
Leeds & Northrup
Millitest Corp
M-H Rubicon Instrs Div
Muirhead Instrs Inc
Ohmite Mfg Co
Pacific Instrument Co
Pimex Inc
Philco Corp
Precision Apparatus Co
Precision Line Inc
Rineo Inc
Rohde & Schwarz
Sensitive Research Instr
Shallcross Mfg Co
Simmonds Precision Prods
Ultronix Inc
Universal Mfg Co
Warwick Products
Welch Mfg Co W M
Wells Electronics
Winslow Company Inc

DEMAGNETIZERS

Aerovox Corp
Annis Co R B
Crucible Steel
Davenport Mfg
Goslin Electric
Green Rectifier
Greibach Instruments
Ideal Industries
Kearfott Div
Kendrick & Davis
L and R Mfg Co
Librascope Div
Luma Electric Equipment
Magnaflux Corp
Martindale Electric
Permag Corp
Philco Corp
Radio Frequency Labs
Robins Industries
Taft-Peirce Mfg
Telectro Industries

DEMODULATORS, Electronic

Acromag Inc
Airpax Electronics
Ameleo Inc
Anadex Instruments Inc
Bulova Research
Calif Computer Prods
Cambridge Electronics
Electro-Mechanical Res
Geotechnical Corp
Industrial Control Co
International Resistance
Kearfott Div
Maclaren & Co F B
Maxson Corp W L
Micro Gee Products
M-H Boston Div
Natel Engrg Co
Northern Radio Co
Philco Corp
Radiation Inc
Ramapo Instr Co
Rixon Electronics
Schaevitz Engineering
Solid State Electronics
Summers Gyroscope
Tele-Dynamics Div
Theta Instrument
Torwico Electronics
Vare Mfg Co
Virginia Electronics
Wiancko Engrg Co

DIODE TEST SETS

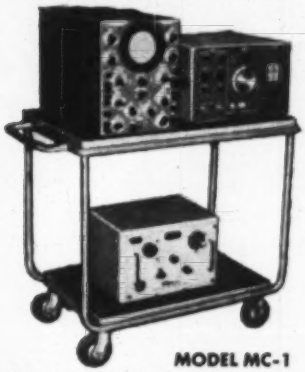
Aerotronic Assoc
Allied Radio
Atlantis Electronics
Barnes Development Co
Crosby-Teletronics Corp
Designers for Industry
Dittmore-Freimuth
Dynatran Electronics
K-H Research Labs
Electro Instruments
Industro Transistor
Kearfott Div
Lumatron Electronics
Measurements Research
Militray Instr Div
Minco Products
Missimers Inc
Monitor Systems Inc
National Standard Elx
Optimized Devices
Philco Corp
Quan-Tech Labs
Rixon Electronics
Sonex Inc
Stromberg-Carlson Co
Tektronix Inc
Texas Instruments Inc
Trak Electronics
Waters Mfg Inc

DISTORTION METERS

Audio Instrument Co
Astron Manufacturing
B and K Instruments
Barker & Williamson
Boonton Electronics
Canadian Marconi
Chadwick-Helmuth
Cubic Corp
Daven Co
Electronic Applications
Electrosolids Corp
Freed Transformer
General Radio
Heath Co
Hewlett-Packard
Marconi Instruments
Philco Corp

When Using This Guide look under the variable, e.g., Pressure Gages (not Gages, rressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

OSCILLOSCOPE AND INSTRUMENT CARTS



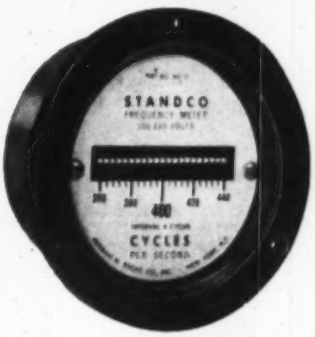
MODEL MC-1

Decks ¾", plywood with ribbed rubber cover. Top deck 22x36". Bottom deck 21x30½", 8" off floor. Top deck has rubber bumper. Arc-welded one-inch tubing, grey enamel paint. Capacity 500 lbs. 5x1.5" ballbearing Donut Wheels, flush type greaser axles, Nylock nuts, sealed swivel casters.
H. 34", W: 24", L: (incl. handle) 41½". Shipping Weight: 114 lbs. $74.00.
(Options: One deck Formica $5.75, both decks Formica $9.00. Drawer under top deck, 14x20x5" $20.90)

TECHNIBILT
CORPORATION
905 Airway, Glendale 1, California

CIRCLE 177 ON RAEDER-SERVICE CARD

"STANDCO"
VIBRATING REED
FREQUENCY METERS



HERMETICALLY SEALED
and Ruggedized
3½" and 2½" Sizes
Meeting all MIL Specs

Normal Frequencies
25, 50, 60 or 400 Cycles
Special Ranges
from 15-1500 cycles
ALSO IN OTHER TYPES

PANEL MOUNTING: 3½" Flush Bakelite.
SWITCHBOARD MOUNTING: 7¼" round surface, or 4½" square semi-flush cases.
PORTABLES: In large or small cases.

Write for Bulletin 805

HERMAN H. STICHT CO., INC.
27 PARK PLACE, NEW YORK 7, N. Y.

CIRCLE 178 ON READER-SERVICE CARD

When Using This Guide
look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

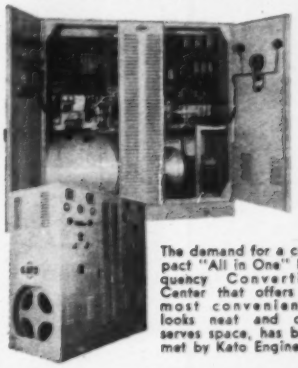
ELECTRIC POWER GENERATION INSTRUMENTS, including Power Analyzers, Frequency and Phase Instruments, Substation Instruments
Assembly Products Inc
Associated Research
Avtron Manufacturing
Bristol Co
Communication Meas Lab
Consolidated Diesel
Control Electronics
Dice Co J W
Eastern Specialty Co
Edison Industries T A
Electric Regulator
Engelhard Industries
Esterline-Angus
Federal Pacific
Fischer & Porter Co
Fluke Mfg Co
GE Apparatus Sales Div
Gulton Industries
Hathaway Instruments
Hickok Electrical Instr
Industrial Test Equip
Kahn & Co
Kearfott Div
Knopp Inc
Leeds & Northrup
Metrolog Corp
M-H Brown Instrs Div
Motorola Military Elx
Natl Electronics (Wyo)
North Atlantic Indus
Northeastern Engrg
Opad Electric Co
Probescope Co
RCA Systems Support
Sangamo Electric Co
Sensitive Research Instr
Therme Electric
Trygon Electronics
Universal Match
Varo Mfg Co
Vidar Corp
Westinghouse Electric
Westronics Inc
Winslow Company Inc

ELECTRICAL INSTRUMENT CALIBRATORS and TEST SETS for Voltage, Current, etc.
Allied Radio
Artronic Instr Co
Avtron Manufacturing
Bendix Scintilla Div
British Industries
Bristol Co
Bruno-New York Inds
Canadian Marconi
Carter Mfg
Chesapeake Instr
Control Electronics
DJECO
Davenport Mfg
Daystrom/Weston
Deltron Inc
Eastern Specialty Co
Electro Instruments
Electro Metric Co
Electronic Instrument
Electro-Pulse Inc
Federal Pacific
Fluke Mfg Co
Gordon Enterprises
Gray Instrument
Greibach Instrument
Hathaway Instruments
Hewlett-Packard
Hewson Co Inc
Industrial Instrs Inc
Julie Research Labs
Knopp Inc
Leeds & Northrup
Measurements Research
Mera Engrg Inc
Millivac Instr Div
M-H Brown Instrs Div
M-H Marion Instr Div
M-H Rubicon Instrs Div
Muirhead Instrs
Multi-Amp Electronic
Narda Corp
Non-Linear Systems
Northeastern Engrg
Pearce-Simpson Inc
Peschel Electronics
Philco Corp
Physical Sciences Corp
Physics Research Labs
Pickard & Burns
Precision Apparatus Co
Probescope Co
RCA Systems Support
Radiation Inc
Radio Frequency Labs
Ruge Associates
Sel-Rex Corp
Servo-Tek Products
Shallcross Mfg Co
Simpson Electric
Small Motors Inc
Smith-Florence Inc
Sorensen & Co
States Company
Sunshine Scientific
Telechrome Mfg Corp
Therme Electric
Trio Laboratories
Trygon Electronics
Ultronix Inc
United Control Systems
Weinschel Engrg
WE-Instr & Control Sys
Weathers Mfg Co
Westinghouse Electric
Winslow Company Inc

ELECTROMETERS, Quadrant, String, Vibrating Reed
Advanced Instruments
American Tradair
Applied Physics Corp
Applied Radiation Corp
Curtiss-Wright
E-H Research Labs
Gyra Electronics
Halex Inc
Milton Roy Co
Nuclear-Chicago
Philco Corp
Special Instruments Lab
Sticht Co Herman
Victoreen Instr Co

FAULT LOCATORS & RECORDERS, Communication and Lines, Electrical Resistance
Associated Research
Automatic Timing & Contls
Biddle Co James G
Davenport Mfg
Daystrom/Weston
Designers for Industry
Dit Mco Inc
Epic Inc
General Devices
Gray Instrument
Greibach Instrument
Industrial Instrs Inc
Instrument Laboratories
Lavoie Labs
Leeds & Northrup
M-H Industrial Systems
M-H Rubicon Instrs Div
Muirhead Instrs Inc
Multi-Amp Electronic
Opad Electric Co
Parr Mfgrg Corp
Peschel Electronics
Philco Corp
Princeton Div
Shallcross Mfg Co
Sierra Electronic Corp
Smith-Florence Inc
Sorensen & Co
Techni-Rite Elx
Tobe Deutschmann Corp
Whitney Blake Co

FULLY HOUSED FREQUENCY CONVERTING SYSTEM!



The demand for a compact "All in One" Frequency Converting Center that offers utmost convenience, looks neat and conserves space, has been met by Kato Engineers.

Housed within this cabinet are a Kato Motor Generator and all the necessary controls that include the Kato manufactured "Regociter" static exciter regulator as well as reduced voltage synchronous motor starter.

KATO'S SYSTEMS APPROACH to power conversion offers the advantage of the size and type of motor generator set with the necessary controls to meet your exacting requirements.

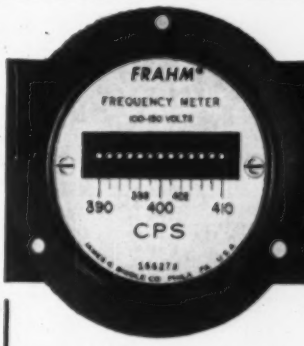
A COMPLETE LINE OF AC GENERATORS ADAPTABLE TO ANY INDUSTRIAL ENGINE.

WRITE FOR DETAILS!

KATO *Engineering Company*
1490 FIRST AVE., MANKATO, MINNESOTA

Builders of Fine Rotary Electrical Machinery Since 1928

CIRCLE 179 ON READER-SERVICE CARD



FRAHM®
FREQUENCY METERS

....in Switchboard, Miniature and Portable types
....indicate alternating current frequency from 15 up to 1500 cycles per second
....applicable to pulsating or interrupted D-C as well as A-C supply circuits

Frahm Resonant Reed Miniature Sealed Type Frequency Meters are hermetically sealed to withstand excessive humidity, dust, fungus attack, moisture (as aboard ship) and other destructive atmospheric conditions. Available in 2½" and 3½" sizes.

Frahm Frequency Meters can be specially designed to your specifications for range, methods of activating, scale graduations, etc. We invite your correspondence.

WRITE FOR BULLETIN 32-I.

JAMES G. BIDDLE CO.
Electrical and Speed Measuring Instruments
1316 ARCH STREET, PHILADELPHIA 7, PA.

CIRCLE 180 ON READER-SERVICE CARD

The "COMMANDER" instruments described below have a 5-year accuracy guarantee. By using NBS or NRC reported values, total cumulative errors for a complete measurement system can be as low as ±.002%.

DAUPHINEE POTENTIOMETER TYPE 9144

ACCURACY ±.001%

A 7-figure (above 1 V.) DC vernier potentiometer with a total measuring range of 2.101010V. *Accuracy is at least 10 x that of similar commercially available equipment.* Direct readout on 4 dials in increments of .1 μv (no slidewire). Thermal emf's less than .1 μv. Switch controlled ranges of x 1 & x .1. Contains 2 saturated standard cells in an internally thermostated enclosure. Completely "Self-Checking." *May be used with equal facility and accuracy as a Saturated Standard Cell or Resistance Comparator — and for the calibration of .01% accurate potentiometers.*

The Type 9144 is an original design by Dr. T. M. Dauphinee of the National Research Council in Canada. All rights are protected by a United States patent application.

VOLT RATIO BOX TYPE 9700

ACCURACY ±.005%

A volt ratio box similar to that used by the National Bureau of Standards as described by NBS Research Paper RP 1419. Self-heating and surface leakage negligible. Ranges: .15/.3/.45/.6/.75/1.5/3/4.5/6/7.5/15/30/45/60/75/150/300/450/600/750 V. (Type 9700A includes 1500 V. range). Furnished in a thermostated oil bath with a motor-driven impeller.

CONSTANT TEMPERATURE STANDARD CELL ENCLOSURE TYPE 9152 AND SATURATED STANDARD CELL TYPE 4305

ACCURACY ±.001%

Enclosure accommodates up to 4 cells and is air thermostated at 28°C ± .025°C. Transistorized circuit. Operates on 110V/60 cps (Battery standby).

THE TYPE 5214 GALVANOMETER AMPLIFIER AND TYPE SR21 LIGHT SPOT GALVANOMETER.

The amplifier operates on the differential photocell principle in conjunction with a liquid-filled primary galvanometer. The secondary galvanometer has a scale length of 120-0-120 mm and is stable and free from the effects of external vibration. Over-all sensitivity is approximately 350,000 mm/μa and 35,000 mm/μv. It is ideally suited for use with the type 9144 potentiometer.

Sensitive Research "COMMANDER" Instruments are manufactured by Guildline Instruments, Ltd. (formerly Tinsley Instruments (Canada) Ltd.)

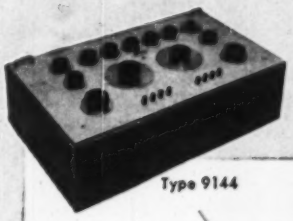
SENSITIVE RESEARCH INSTRUMENT CORPORATION

NEW ROCHELLE, N. Y.

ELECTRICAL INSTRUMENTS OF PRECISION SINCE 1927

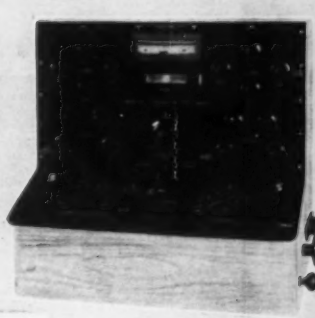
CIRCLE 181 ON READER-SERVICE CARD

Laboratory Standard Potentiometer. A new line of temperature-controlled 6-dial instruments, reading from 2.101010 volts by microvolts, or from .2101010 by .1 microvolts, and calibrated to be useable for linearity to an accuracy of ± .0002% or better. Absolute guaranteed accuracy of ± .001% is 10 times better than any like equipment available commercially today. Excellent resolution permits use as a saturated standard cell comparator. Available with accessory items such as Four Terminal Type Resistors, Volt Ratio Boxes, Low Thermal EMF Transfer Switches, Galvanometers, Constant Temperature Standard Cell Enclosures and Saturated Standard Cells.



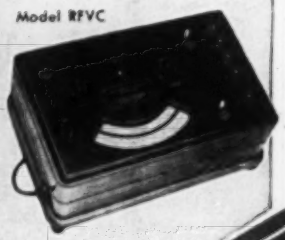
Type 9144

Calibration Console. Accuracy ± .05% of actual reading DC to 25kc. Ranges .5v. to 1111v. and 1 ma. (2 ma. on AC) to 11.11 amps in decades of .1v. and 1 ma. Resolution ± .01%. Direct readout in % error as well as in actual values. Console consists of a Hermach type AC-DC thermal transfer standard and a separate DC Calibrator. Complete with ± .005% stable reference source, high sensitivity galvanometer and self contained controls. Designed for one-man operation! Model LT-PS is a wide range, low distortion (.1%), highly stable AC power supply designed to operate within the full capabilities of the console.

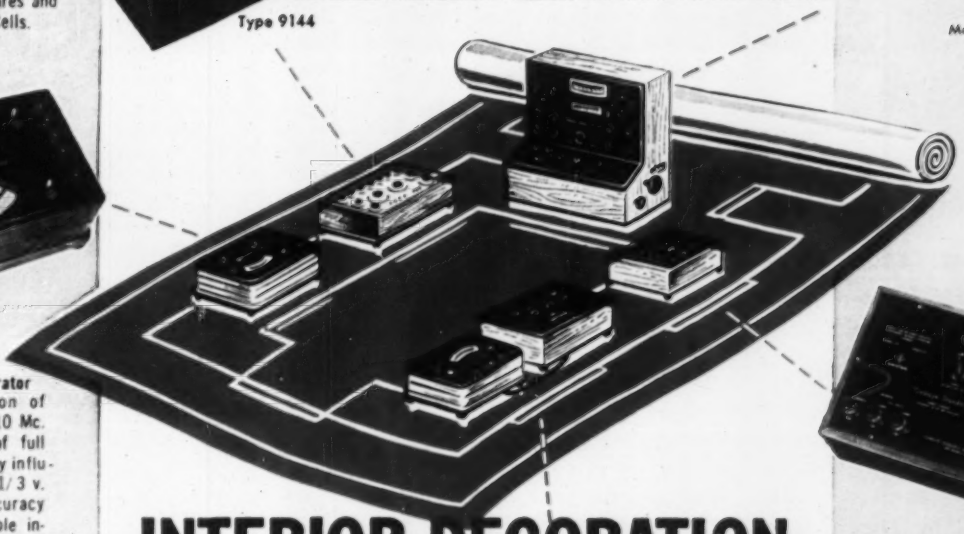


Model LTC

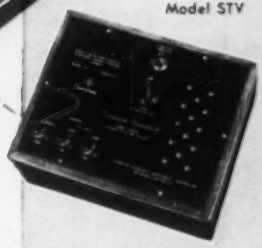
Model RFVC



Radio Frequency "Self Checking" RMS Voltmeter Calibrator for the certification of VTVM's from DC to 10 Mc. Accuracy ± .3% of full scale, ± .2% frequency influence. Ranges .01/.1/1/3 v. Checks its own accuracy against a .05% stable internal standard source. Instrument reading with changes in frequency is stable and exactly reproducible. Diamond Pivoted of course!



Model STV



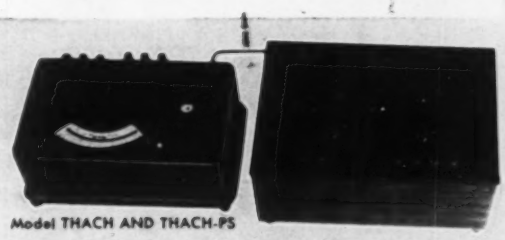
INTERIOR DECORATION

(Laboratory Style)

by SENSITIVE RESEARCH

± .01% accurate, ± .005% stable DC reference source! Ranges 1.0000v. and 1.0185v. For use with "null balance" devices such as potentiometers and other infinite impedance comparators. Unaffected by vibration, extremes of temperature, or changes in operating position. Can be short circuited indefinitely without affecting accuracy or life expectancy. Input 90-140v. at 15°c-35°c.

Wide Range Calibrator, Laboratory Standard and General Purpose Power Supply. Model Thach: AC/DC "Self Checking" Volt-Amp-Milliammeter. Accuracy ± .2% to 4kc. Ranges 10/20/50/100/200/500 ma.; 1/2/5 amps; 1/2/5/10/20/50/100/200/500/1000 v. Checks its own accuracy against an internal standard cell. Model Thach-PS: Regulated power supply with interlocking controls. Automatically shuts off power to the Model Thach when switching ranges, reducing danger of accidental overloading of standard and/or instrument under test. Output is DC and 60 cps. (50-2500 cps can be plugged in).



Model THACH AND THACH-PS

REDECORATING!? . . . make sure you see SRIC's approach before you make your final plans. While most instrument manufacturers have gone "fascinatingly electronic," SRIC has been moving into the complete field of accurate and dependable measurements through the application of fundamental electrical indicating instruments and primary standards. Words like "Automation" and "Versatility" have not been ignored . . . in most cases they've just been combined with "Reliability." Whatever your interest . . . Primary or Secondary Standards . . . Portable, Panel or Special Instruments . . . investigate Sensitive Research . . . the electronic world's most respected manufacturer of reliable measuring equipment!

SENSITIVE RESEARCH INSTRUMENT CORPORATION

NEW ROCHELLE, N. Y.

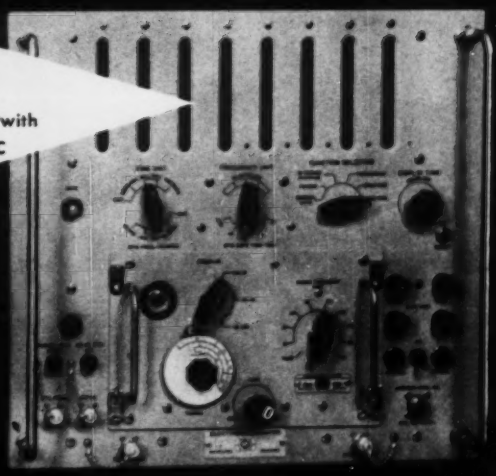
ELECTRICAL INSTRUMENTS OF PRECISION SINCE 1927

Symbol of Quality

For Frequency Measurement, Counting, Periods, Time Intervals . . .

ELECTRONIC COUNTERS

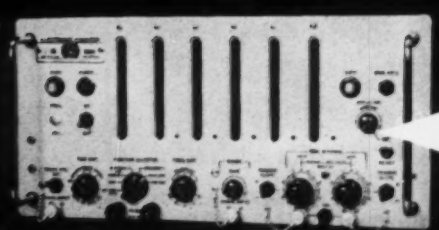
MODEL 14-20A
$1,700
10 cps to 10 MC with
Plug-Ins to 220 MC



NEW–
Advanced
Circuitry

NEW–
Mechanical
Design.

NEW HIGHS in STABILITY and ACCURACY
Yet at New LOWS in COST !



MODEL 13-20
$995
10 cps to 1.1 MC

BOTH MODELS available with optional Transistorized Oscillator: Stability 5 parts in 10^8 per week; and 5 parts in 10^8 per month thereafter; at nominal additional cost.

NORTHEASTERN ENGINEERING, INC.
MANCHESTER, N. H. • 25 So. Bedford St.
P. O. Box 150 • NAtional 2-6485

CIRCLE 182 ON READER-SERVICE CARD

FIELD-STRENGTH MEASURING SETS, Electromagnetic Field (see also Magnetic Field)
Canadian Marconi
Halex Inc
Land-Air Inc
Magnaflux Corp
Magnetic Shield Div
Measurements Div
Panoramic Radio Prods
Philco Corp
Polarad Electronics Corp
Rohde & Schwarz
Scientific-Atlanta
Simpson Electric
Stoddart Aircraft Radio
Sunshine Scientific
Telerad Mfg Corp
United Shoe Machinery
Weinschel Engrg

FREQUENCY CHANGERS
Abacus Inc
Accurate Instrument
Bill Jack Scientific
Carter Motor
Communication Meas Lab
Control Electronics
Designers for Industry
Dittmore-Freimuth
Elcor Div
Electro Instruments
Electrodynamic Instr
Electron Arc
Electrosolids Corp
Entron Inc
GE Apparatus Sales Div
Georator Corp
Industrial Test Equip
Kato Engrg Co
Kavamil Co
Leach Corporation
Manson Labs
Marathon Electric
National Standard Elx
New Jersey Meter Co
P and H Electronics
Philco Corp
Radio Frequency Labs
Riverbank Labs
Rixon Electronics
Robbins & Myers
Sorensen & Co
Tel-Instrument Elx
Varo Mfg Co
Westamp Inc
Westinghouse Electric

FREQUENCY INDICATORS and/or RECORDERS, CONTROLLERS
Airpax Electronics
Ameloo Inc
Amerac Inc
Anadex Instruments Inc
Automatic Timing & Contls
Autron Manufacturing
Beckman/Berkeley Div
Beckman/Helipot Div
Biddle Co James G
Budd Stanley
Canadian Marconi
Computer Measurements
Consol Controls
Control Electronics
Cox Instruments
Daystrom/Weston
Designers for Industry
Edison Industries T A
Electro Instruments
Electro Precision
Erie Pacific
Esterline-Angus
Federal Pacific
GE Apparatus Sales Div
Hewlett-Packard
Hickok Electrical Instr
Howell Instruments
J-B-T Instruments Inc
Kahn & Co
Kay Electric
Lampkin Labs
Leeds & Northrup
Lumen Inc
Measurements Div
Micro Gee Products
Millen Mfg Co
M-H Brown Instrs Div
Model Engrg
Muirhead Instrs Inc
Natel Engrg Co
Natl Electronics (Wyo)
National Standard Elx
Northeastern Engrg
PRD Electronics
Phaostron Instr & Elx
Philco Corp
Potter Aeronautical
Sanborn Company
Simpson Electric
Stiehl Co Herman
Systron Corp
Telerad Mfg Corp
Varo Mfg Co
Vectrol Engrg
Vickers Electric Prods Div
Vidar Corp
Waugh Engrg Co
WE Inst & Control Sys
Westinghouse Electric
Westronics Inc
Winslow Company

FREQUENCY RESPONSE RECORDERS
Acromar Inc
Automatic Timing & Contls
Autron Manufacturing
B and K Instruments
Boonshaft and Fuchs
Brush Instruments Div
Canadian Marconi
Gerber Scientific Inst
Industrial Measurements
Kay Electric
Land-Air Inc
Moseley Co F L
Muirhead Instrs Inc
Philco Corp
Sanborn Company
Southwestern Indus Elx
Techni-Rite Elx
Tektronix Inc
Telectro Industries
Westronics Inc

GALVANOMETERS, AC, Astatic, DC, Magnetostriction and Piezoelectric, Reflecting, Suspension Strip, Vacuum-tube, Vibration
Allegany Instrument
Biddle Co James G
British Industries
Cambridge Instrument
Centrup Elx & Instrs
Coleman Instruments Inc
Consol Electrodynamics
Daystrom/Weston
Engis Equipment
Epic Inc
Federal Pacific
GE Apparatus Sales Div
Geotechnical Corp
Greibach Instruments
Hamilton Watch Co
Hathaway Instruments
Hickok Electrical Instr
Howell Instrument Co
Leeds & Northrup
Massa Div
Midwestern Instrs
M-H Helland Div
M-H Rubicon Instrs Div
Offner Electronics Inc
Pace Electrical Instrs
Philco Corp
Photron Instr Co
Physics Research Labs
Pitnex Inc
Precision Apparatus Co
Sanborn Company
Shallcross Mfg Co
Simpson Electric
Spectrum Instruments
Techni-Rite Elx
Welch Mfg Co W M
Westinghouse Electric
Winslow Company Inc

GENERATOR SETS, Automatic Engine-Driven, for Emergency Power
Airesearch Mfg Co
Consolidated Diesel
Georator Corp
Hoover Electric Co
Instrument Lab Inc
Kearfott Div
Penco Products Div
Philco Corp
Telectro Industries
Wickes Engrg & Constr
Wincharger Corp

GENERATORS, AC, Complex wave, DC, Noise, Pulse, Signal, Square Wave; Sweep Frequency (including AF, RF, UHF); Synchro
Abacus Inc
Airesearch Mfg Co
Airtronics Inc
Alfred Electronics
Allied Radio
Allison Laboratories
Allis-Chalmers
Arenberg Ultrasonic
Artronic Instr Co
BJ Electronics
Bendix Utica Div
Boonshaft and Fuchs
Bulova Research
Burmac Electronics
Canadian Marconi
Carol Electronics
Chadwick-Helmuth
Clegg Labs
Clough Brengle
Columbia Electric
Communication Meas Lab
Convair Instruments
Cooper Development
D & R Ltd
Dalmotor Div
Donner Scientific
DJECO
DuMont Labs Allen B
Dymec Inc
E-H Research Labs
EMP Electronics Res Lab
Elcor Div
Electric Autolite
Electric Indicator
Electric Tachometer
Electro-Mechano Co
Electronic Instrument
Electronic Tube
Electro-Pulse Inc
Electrosolids Corp
F & R Inc
Flow Corporation
General Communication
General Computers Inc
General Radio
Georator Corp
Globe Industries
Gulton Industries

Hathaway Instruments
Hayden Co A W
Heath Co
Hewlett-Packard
Hickok Electrical Instr
Holtzer-Cabot Div
Industrial Test Equip
Instrument Corp of Amer
Instrument Corp of Fla
Interelectronics
Ipsen Industries
Jerrold Electronics
Kato Engrg Co
Kay Electric
Kidde & Co
Kearfott Div
Laboratory for Electronics
Lampkin Labs
Lavoie Labs
Leach Corporation
Ling Electronics
Lumatron Electronics
Marathon Electric
Marconi Instruments
Measurements Div
Microlec Corp
Model Engrg
Muirhead Instrs Inc
Natl Ultrasonic
Navigation Computer Corp
New London Inst
Northeast Scientific
Orbitran Co
Oster Mfgrg John
P and H Electronics
Pacific Transducer Corp
Pearce-Simpson Inc
Philamon Labs Inc
Philco Corp
Polarad Electronics Corp
Precision Apparatus Co
RCA Defence Electronic
RCA Systems Support
Radiation Instr Dev Lab
Ransom Research
Parabam Inc
Raytheon/Indust Comp
Rese Engrg Inc
Rixon Electronics
Rutherford Electronics
Sangamo Electric Co
Saco Electronics
Servo Systems Co
Sierra Electronic Corp
Simpson Electric
Small Motors Inc
Spectrum Instruments
Spencer-Kennedy Labs
Stoddart Aircraft Raio
Technitrol Engrg
Tektronix Inc
Telectro Industries
Tel-Instrument Elx
Telechrome Mfg Corp
Telerad Mfg Corp
Telonic Engineering
Trad Electronics
Trak Electronics
Triplett Electl Instr
Trygon Electronics
Universal Match
Van Norman Industries
Vernistat Div
Virginia Electronics
Walkirt Co
Waveforms Inc
Weinschel Engrg
Wickes Engrg & Constr

GROUND DETECTORS

Associated Research
Biddle Co James G
Curtiss Wright
Davenport Mfg
Eastern Specialty Co
GE Apparatus Sales Div
General Railway Signal
Mast Development
Opad Electric Co
Parr Mfgrg Corp
Peschel Electronics
Philco Corp
Princeton Div
Sterling Precision
Sunshine Scientific
WE Inst & Control Sys
Westinghouse Electric

HIGH-FREQUENCY APPARATUS, Including RF Heaters

Ameico Inc
Bendix Scintilla Div
Electron Arc
Epic Inc
General Electrodynamics
Gerator Corp
Laboratory Equip Corp
Lepel High Frequency Labs
Lindberg Engrg Co
Manson Labs
Miller Co L C
M-H Marion Instr Div
Natl Ultrasonic
P and H Electronics
Philco Corp
Polarad Electronics Corp
Powertron Ultrasonics
Reeve Electronics
Spectra Electronics
Westinghouse Electric

ILLUMINATION INSTRUMENTS, Including Exposure Meters, Foot Candle Meters, Photometers, etc.

Automation Dynamics
Boone Instrument
Bush Associates G F
Curtis Labs
Daystrom/Weston
Electron Arc
GE Apparatus Sales Div
Gordon Enterprises
Gurley W & L E
Leeds & Northrup
Macbeth Corp
Muirhead Instrs Inc
Physical Sciences Corp
Schlumberger Corp
Spectra Electronics
Stichl Co Herman
Wright Machinery Co

ILLUMINOMETERS, Macbeth

Leeds & Northrup

IMPEDANCE MEASURING INSTRUMENTS, Including Resistance Meters, Z-Angle Meters, etc.

Acton Laboratories
Alford Mfg
Allied Radio
Bendix Scintilla Div
British Industries
Bulova Research
Canadian Marconi
Clegg Labs
Corbett Science Labs
Davenport Mfg
Dytronics Co
Electro Instruments
Electro-Measurements
Electronic Applications
GE Apparatus Sales Div
General Radio
Greibach Instrument
Hewlett-Packard
Indus Instr Auto
Industrial Instrs Inc
Industrial Test Equip
Kearfott Div
Leeds & Northrup
Marconi Instruments
Millivac Instr Div
Muirhead Instrs Inc
Multi-Amp Electronic
Narda Corp
North Atlantic Indus
Optimized Devices
Philco Corp
Precision Apparatus Co
Rinco Inc
Rohde & Schwarz
Ruge Associates
Sterling Precision
Technology Instr (Mass)
Trio Laboratories
United Shoe Machinery
Virginia Electronics
Waldom Electronics
Western Electronic Prods
Westinghouse Electric
Winslow Company Inc

INDUCTORS, Fixed

ACDC Electronics Inc
Aerovox Corp
Barker & Williamson
British Industries
Burnell & Co
Capitron Div
Carol Electronics
Carruthers & Fernandes
Coast Coil
Communication Accessories
Corning Glass
Electron Arc
Ferranti Electric
Freed Transformer
Gates Radio Co
General Radio
International Resistance
Kelvin Electric
Leeds & Northrup
Magnetics Inc
Millen Mfg Co
North Hills Electric
Pacific Instrument Co
Philco Corp
Polyphase Instr Co
Raytheon/Comm Apparatus
Rixon Electronics
Toroids Unlimited Inc
Torwico Electronics
Transformers Inc
United Transformer
Valor Instruments
Wells Electronics
Wheeler Electronics
Wickes Engrg & Constr

INDUCTANCE INDICATORS

Bowmar Instrument
Electro Instruments
Freed Transformer
GE Apparatus Sales Div
Industrial Transformer
Leeds & Northrup
Philco Corp
Rohde & Schwarz
Simpson Electric

INSULATION TESTERS (see also Resistance Indicators, Insulation)

Associated Research
Automation Dynamics
B and K Instruments
Biddle Co James G
Bracke-Beth X-Ray
Cincinnati Sub Zero
Curtiss Wright
Custom Scientific Instrs
Davenport Mfg
Daystrom/Weston

PARABAM

PULSE WAVEFORM GENERATOR

Parabam's Model P-1 Pulse Waveform Generators provide virtually transient free **square, triangular and sine waves plus variable length pulses** • will drive power transistors and relays, electrohydraulic valves, etc. directly from output terminals • pulse length 50 micro sec. to 90 sec. • square, triangular and sine waves 0.01 cps to 2,000 cps • frequency stable within 1%.

For complete information send for tech bulletin No. 660-6.

PARABAM, INC.
13000 YUKON AVENUE
HAWTHORNE • CALIFORNIA
CIRCLE 183 ON READER-SERVICE CARD

HITACHI

Insulation Tester (100V-2500V)

Consisting essentially of an insulation resistance measuring unit and a hand-driven dynamo, this tester is ideal for use on insulators, cables, transmission lines and electrical instruments. Available as double-scale type, double-rating type, etc. Fast, accurate readings . . . no infinity adjustments required . . . completely insulated against external magnetic fields . . . dust and moisture proof . . . no current leakage . . . high tolerance to vibration and shock . . . sturdy, light and compact. Built in strict conformity to Japanese Industrial Standards (JIS C 1301) and Japanese Export Standards, and guaranteed by the name it proudly bears.

Hitachi, Ltd.
Tokyo Japan
Cable Address: "HITACHY" TOKYO

CIRCLE 184 ON READER-SERVICE CARD

INSULATION TESTERS

- High Voltage AC Breakdown Testers—Types PA.
- General Purpose AC/DC Breakdown Tester—Type P.
- Arc Resistance Testers Types ART-1, ART-2.
- Megohmmeters for Insulation Resistance—Type L Series

Write for complete catalog

Industrial Instruments Inc.
89 Commerce Road Cedar Grove Essex County N J

CIRCLE 185 ON READER-SERVICE CARD

Dit Mco Inc
Eastern Specialty Co
Electro Instruments
Epic Inc
Freed Transformer
General Radio
Greibach Instrument
Haydon Co A W (Calif)
Hewson Co Inc
Hitachi Ltd
Holtzer-Cabot Div
Ideal Industries
Indus Insts Autn
Industrial Instrs Inc
Industrial Test Equip
Industrial Transformer
Janco Corp
Kilovolt Corp
Manson Labs
Martindale Electric
Meters Inc
Muirhead Instrs Inc
Multi-Amp Electronic
Opad Electric Co
Optimized Devices
Pearce-Simpson Inc
Peschel Electronics
Philco Corp
Physics Research Labs
Precise Measurements Co
Radio Frequency Labs
Rohde & Schwarz
Sanborn Company
Shallcross Mfg Co
Slaughter Co Inc
Spellman High Voltage
Sticht Co Herman
Strand Engrg Co
Sunshine Scientific
Van Norman Industries
Wickes Engrg & Constr
Winslow Company Inc
Yokogawa Electric Works

INTEGRATORS, Electrical and Electronic

Airpax Electronics
Allegany Instrument
American Electronics Inc
Anadex Instruments Inc
Anderson Labs
Beckman/Helipot Div
Biophysical Electronics
Bulova Research
Computers Inc
Cramer Controls Corp
DJECO
Daystrom/Weston
Di/An Controls
Donner Scientific
Dynamics Instrumentation
E-H Research Labs
Elcor Inc
Electro Instruments
Electronic Associates
Ford Instr
General Mills Inc
GPE Controls
Hallikainen Instrs
Infrared Industries
Instron Engrg
Kearfott Div
Librascope Div
Link Div
MacLaren & Co F B
Maxson Corp W L
M-H Brown Instrs Div
National Standard Elx
Panoramic Radio Prods
Philbrick Researches Inc
Philco Corp
Reeves Instr Corp
Royson Engrg Co
Schlumberger Corp
Southwestern Indus Elx
Summers Gyroscope
United Engineers Inc
Vidar Corp
Wheelco Instruments Div

INVERTERS, DC to AC

Abrams Instrument
Accurate Instrument
AC/DC Electronics Inc
Airborne Accessories
Airesearch Mfg Co
Airpax Electronics
Allegany Instrument
Alto Scientific
American Bosch Arma
American Electronics Inc
Amer Television & Radio
Arnold Magnetics Corp
Barker & Williamson
Bergen Labs Inc
Bristol Co
Brunswick Instruments
Capitron Div
Carruthers & Fernandez
Collins Electronics
Communication Meas Lab
Control Electronics
Davenport Mfg
DJECO
Elcor Div
Electric Regulator
Electrodynamic Instr
Electronic Dev Corp
Electronic System Dev
Electrosolids Corp
Engineered Magnetics
General Devices
GE Apparatus Sales Div
General Electrodynamics
Geotechnical Corp
Hamilton Standard Div
Hathaway Instruments
Hoover Electric Co
Interelectronics
Kavanau Co
Leach Corporation
Lumen Inc
Magnetic Controls Co
Magnetics Inc
Mallory & Co P R
Maxson Corp W L
Milro Controls
Model Engrg
Northatrol Electronics
Opad Electric Co
Oster Mfgrg John
Pacific Instrument Co
Perkin Egrg Corp
Pesco Products Div
Philco Corp
Power Designs
Power-Tronic Systems
Sangamo Electric Co
Solid State Electronics
Sorensen & Co
Southwestern Indus Elx
Standard Electric Time
Summers Gyroscope
Tapco Group
Tech Apparatus Bldrs
Telechrome Mfg Corp
Torvico Electronics
Unitwave Inc
Valor Instruments
Varo Mfg Co
Westamp Inc
Wheeler Electronics
Wickes Engrg & Constr
Wincharger Corp

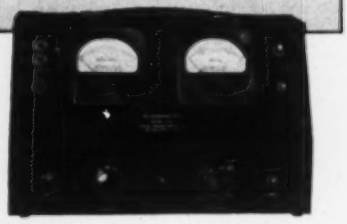
JUNCTION BOXES

ACDC Electronics Inc
Adalec Mfg Co
Ampco Mfg Co
Berson Engrg Corp
Bud Radio
Control Technology
Designs for Tomorrow
Dittmore-Freimuth
Hoover Electronics
Howell Instruments
Joy Mfg Co
Keystone Mfg Co
Molex Products
Rixon Electronics
Thermo Electric
Wells Electronics

KVA INDICATORS and/or RECORDERS

Bristol Co
Daystrom/Weston
Esterline Angus
GE Apparatus Sales Div
Leeds & Northrup
M-H Brown Instrs Div
Philco Corp
Sangamo Electric Co
Texas Instruments Inc
Westronics Inc

FREED
VARIABLE TEST VOLTAGE MEGOHMMETER NO. 1620



The Freed Type 1620 Megohmmeter is a versatile insulation resistance measurement instrument with a continuously variable DC test potential from 50 to 1000 volts.

Components such as transformers, motors, printed circuits, cables and insulation material can be tested at their rated voltage and above, for safety factor.

- **Resistance — 0.1 megohms to 4,000,000 megohms.**
- **Voltage — variable, 50 - 1000 volts.**
- **Accurate — plus or minus 3% on all ranges.**
- **Simple — for use by unskilled operators.**
- **Safe — high voltage relay controlled.**
- **Self contained — AC operated.**

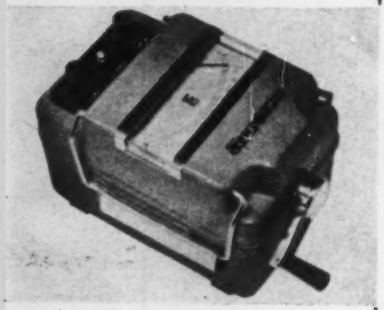
OTHER MEGOHMMETERS AVAILABLE

Type 1620C MEGOHMMETER — a type 1620 with additional circuitry for testing capacitors.
Type 1620B MEGOHMMETER — a 500 volt fixed test potential. Range 1 megohm to 2 million megohms.
Type 2030 PORTABLE MEGOHMMETER — battery operated 500 volt test potential. Range 1 megohm to 10 million megohms.

Send for NEW 48 page transformer catalog. Also ask for complete laboratory test instrument catalog.

FREED TRANSFORMER CO., INC.
1735 WEIRFIELD ST., BROOKLYN (RIDGEWOOD) 27, N.Y.
CIRCLE 187 ON READER-SERVICE CARD

INSULATION TESTER
Model L-5



- ***Expanded Scale***
- ***Quick response***
- ***Silent Generator***
- ***CORE MAGNET mechanism indicator***
- ***Housed in light metal case***
- ***Optional accessory of leather carrying case and leads***

PORTABLE PRECISION AC-DC INSTRUMENTS

Rated accuracy 0.5 of 1% of full scale

- ***DC, AC and High Frequency Voltmeter and Ammeter***
  DC: Model MPf
  AC: Models SPf, CPf
  HF: Model TPf
- ***Wattmeter***
  DC-AC: Model DPB-1W

YEW YOKOGAWA ELECTRIC WORKS, Inc.
40 Worth Street · New York 13, N. Y.

CIRCLE 186 ON READER-SERVICE CARD

When Using This Guide look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

MEGOHMER
INSULATION TESTERS

GENERATOR TYPES

"MINOR" Dwarf Size, 3 lbs., 500 Volts DC, 100 megohms, Bulletin 450

"MAJOR" Small size constant pressure, 500 Volts DC, 100 megohms. Extra ohm scale. Bulletin 465

"STANDARD" Heavy duty constant pressure 500 or 1000 Volts DC. Ranges to 2000 megohms. Bulletin 455

BATTERY VIBRATOR TYPES

"MODEL B-7" Precision Ohmmeter-Megohmmeter. 2 megohm ranges, 2 ohm ranges, 2 test potentials. Bulletin 440

"MODEL B-6" 4 instruments in 1. Ranges: 200 megohms, 2000 ohms, AC & DC volts up to 600. Bulletin 441

PLUG-IN-TYPE

115 V. AC line Operated. **New Model P-1** Test Potential 500 V. DC or 1000 V. DC. Ranges: 0-100 or 0-1000 or 0-2000 Megohms. Bulletin 451

ELECTRONIC TYPE
20,000,000 Megohms

Model 29A with 11 ranges. Measures from 300,000 ohms to 20 million megohms. Test Potentials 85V DC and 500V DC. Bulletin 1029

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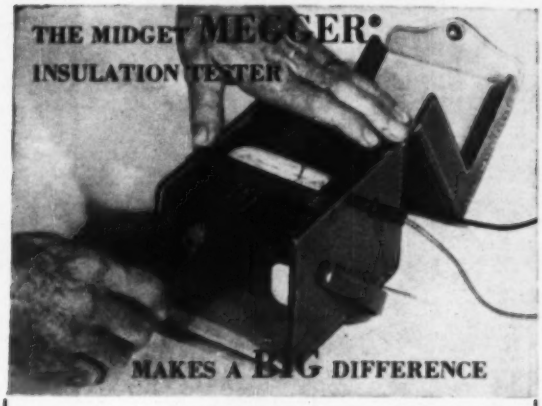

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Only by periodic insulation resistance measurements can you be sure of the condition of electrical insulation in your machines. Test with a dependable Megger Insulation Tester and keep records of each piece of equipment.

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Insulation testing at a-c potentials with separate indication of leakage current and insulation breakdown. Optional features including audible "squawker" leakage current indicator with provision for external control circuits, meet needs of high production and automated test installations.

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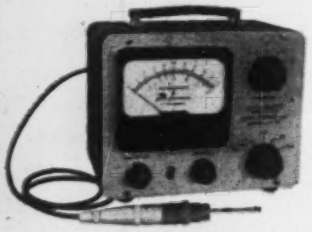

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GRAY INSTRUMENTS

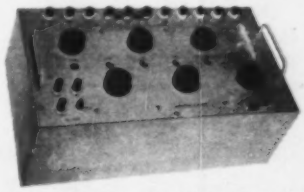
FOR

ACCURATE MEASUREMENT

AND

CALIBRATION

MODEL E-3002 SIX DIAL UNIVERSAL RATIO SET



FOR PRECISE CALIBRATION OF VOLTAGE DIVIDERS, POTENTIOMETERS, RESISTANCE STANDARDS. LINEARITY ± .0001%

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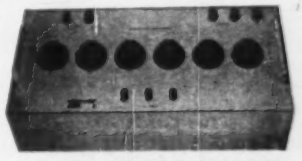

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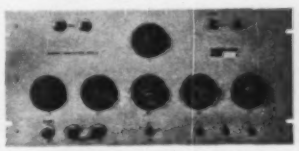
MODEL E1105 GUARDED



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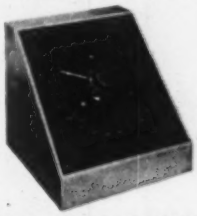

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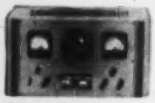

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INPUT: 115 Volts AC 60 cycles, 1 phase
OUTPUT: 0-30 Volts DC, 0-10 Amperes D.C. continuous duty
REGULATION: No load to full load 15%
RIPPLE: less than 0.5% RMS
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Also available in 5 Amperes
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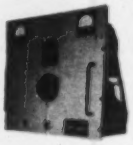
SILICON INDUSTRIAL POWER UNIT

MODEL #G30-40F



INPUT: 115 or 230 Volts AC, 60 cycles, single phase
OUTPUT: 0-30 Volts DC, 0-40 Amperes DC, continuous duty
RIPPLE: 0.5% RMS
DIMENSIONS: 12¼" H x 19" W x 13" D
REGULATION: 1/10 load 35 volts full load 32 volts
PRICE: $325.00

GATES ELECTRONIC CO., 1705 Taylor Ave., New York 60, N.Y., TYrone 2-6490

CIRCLE 195 ON READER-SERVICE CARD

ELECTRONICALLY REGULATED D. C. CONSTANT VOLTAGE POWER SUPPLIES

The output voltage is continuously variable from 200 to 325 volts D.C. for load currents of 0 to 100 M.A. with an input voltage of 105 to 125 volts 60 cycle. Regulation is better than 1%. An isolated A.C. voltage of 6.3 volts at 3 amperes is available at the output terminal connections.

MODEL 3 ILLUSTRATED

MODEL 3 CAB. MTG., VOLTMETER	$69.50
MODEL 1 RELAY RACK MTG.	$52.50
MODEL 2 SUB-CHASSIS MTG.	$49.50
DUAL RACK MOUNT FOR MODEL 2	$9.00

Mounts Two Model 2 Units in 8¾"

ASSOCIATED SPECIALTIES CO.
1751 MAIN STREET
OREFIELD, PENNSYLVANIA

CIRCLE 196 ON READER-SERVICE CARD

Barber-Colman
Beckman/Helipot Div
Bristol Co
Centralab Div
Computer Instruments
Daystrom/Weston
Electric Regulator
Electromath Corp
Epic Inc
Ercona Corp
Fairchild Controls
Foxboro Company
Gamewell Co
GE Apparatus Sales Div
GE Specialty Control
Giannini Controls Corp
Gilmore Industries
Gulton Industries
Handley Inc
Hays Corporation
Howell Instruments
Industrial Control Co
International Resistance
Jordan Controls
Kidnath Instr Co
Leeds & Northrup
Micro-Lectric Div
M-H Brown Instr Div
M-H Industrial Controls
Model Engrg
Moseley Co F L
Norden Division
North Atlantic Indus
Sensitive Research Instr
Seronic Instruments
Shallcross Mfg Co
Shaw Instr Corp
Spectrol Electronics
Systron-Donner
Texas Instruments Inc
Thermo Electric
United Control Systems
Vernistat Div
Waltham Precision Instr
West Instrument
Westronics Inc
Wheelco Instruments Div

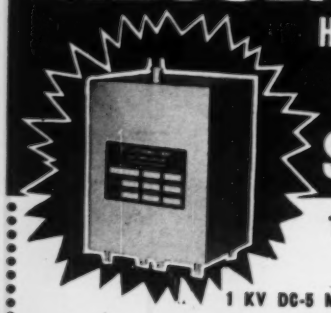
POWER FACTOR INSTRUMENTS

Acton Laboratories
Daystrom/Weston
Epic Inc
Esterline-Angus
Federal Pacific
Fluke Mfg Co
GE Apparatus Sales Div
General Radio
Hathaway Instruments
Industrial Test Equip
Martindale Electric
Nati Electronics (Wyo)
North Atlantic Indus
Philco Corp
Physics Research Labs
WE-Inst & Control Sys
Western Electronic Prods
Westinghouse Electric

POWER SUPPLIES, AC, DC, High Voltage, Regulated

ACDC Electronics Inc
Abacus Inc
Advanced Research
Aerovox Corp
Airborne Accessories
Airesearch Mfg Co
Air-O-Tronics Engrg
Alfred Electronics
Allegany Instrument
Allied Radio
Allis-Chalmers
Amelco Inc
Amerac Inc
American Electronics
Amplifier Corp of Amer
Anders Electric Prods
Applied Radiation Corp
Applied Research Labs
Arnaux Corp
Associated Research
Associated Specialties
Automation Dynamics
Atron Manufacturing
B and F Instruments
Barker & Williamson
Behlman Engineering
Bendix Utica Div
Bethlman Engineering
Beva Laboratory
Brach Mfg Corp
Bracke-Seib X-Ray
Budd Lewyt
Burmac Electronics
Bytrex Corporation
Cadillac Products
Capitron Div
Carruthers & Fernandez
Chicago Condenser
Chicago Std Transformer
Clegg Labs
Collins Corp G L
Consolidated Avionics
Control Circuits Inc
Control Electronics
Control Panel Corp
Communication Meas Lab
Cook Co Frank R
Cooper Development
Crosby-Teletronics Corp
Curtiss Wright
D & R Ltd
Datascan Inc
Daven Co
Davenport Mfg
Daystrom Control Sys
Del Electronics
Deltron Inc
DJECO
Donner Scientific
Douglas Radio Labs
Dressen-Barnes

REGULATED HIGH VOLTAGE POWER SUPPLIES



TRANSISTORIZED

SERIES TRHV

1 KV DC-5 MA To 20 KV DC-1 MA

FEATURES

- All solid state
- Fast response time
- Excellent line and load regulation
- Small size, light weight
- Excellent thermal and time stability
- Sealed construction

MODEL NO.	OUTPUT	SIZE
1R5-1	1 KV-5 MA	4¼ x 3¾ x 5½
2.5R4-1	2.5 KV-4 MA	4¼ x 3¾ x 5½
5R2-1	5 KV-2 MA	4¼ x 3¾ x 5½
7.5R1.5-1	7.5 KV-1.5 MA	4¾ x 4 x 6
10R1-1	10 KV-1 MA	4¾ x 4 x 6
10R2-1	10 KV-2 MA	6¾ x 4¼ x 7½
15R1.5-1	15 KV-1.5 MA	6¾ x 4¼ x 7½
20R1-1	20 KV-1 MA	6¾ x 4¼ x 7½

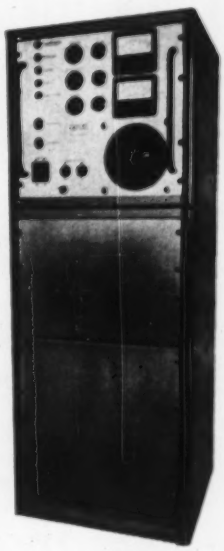
For additional information write to Dept. IB

DEL ELECTRONICS CORPORATION
521 HOMESTEAD AVE. • MOUNT VERNON, N. Y.
OWens 9-3000

Choice sales territories for Mfg. Reps. available.

CIRCLE 197 ON READER-SERVICE CARD

30,000 VOLTS, DC
50 or 100 Ma.



- CAPACITOR CHARGING
- ELECTROSTATIC SPRAYING and FLOCKING
- MINERAL and GRAIN SEPARATION
- SPARKING and CORONA GENERATION
- TUBE DEVELOPMENT and TESTING

Fully instrumented. Maximum personnel and equipment protection. Conservatively designed for continuous operation. Variable voltage adjust, over-voltage and over-current controls afford exceptional flexibility. Functional pilot-lamp indicators and logical arrangement of panel features allows for sure control by engineer or technician.

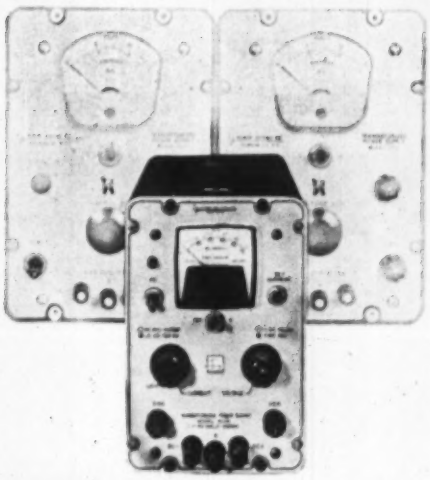
Specialists in High Voltage -- 1 KV to 250 KV

KILOVOLT CORPORATION

2 MANOR HOUSE SQUARE
YONKERS, N.Y.
YOnkers 9-1615

CIRCLE 198 ON READER-SERVICE CARD

RECOGNIZED RELIABILITY



CONSTANT VOLTAGE
CONSTANT CURRENT

FROM THE SAME TERMINALS!

The Power Designs Inc. Model 4005 Power Supply adds a new dimension to the application of d-c sources for laboratory instrumentation. Truly universal, the Model 4005 may be operated as a *constant voltage source, a constant current source, a constant-voltage source with automatic current limiting or a constant current source with automatic voltage limiting.*

The Model 4005 employs semiconductor devices exclusively in a new proprietary circuit called..... AMBITROL

AMBITROL* is a dual regulator system permitting continuous control of voltage or current with automatic electronic cross-over to either mode of operation.

The supply also features remote voltage programming, dual concentric controls for both coarse and fine adjustment of voltage or current and the HEATRAN® circuit for electronic control of power transistor dissipation.

*TM

$143.50
F.O.B. FACTORY

MODEL 4005 SPECIFICATIONS

INPUT: 105-125 volts, 55-440 cycles single phase.
TEMPERATURE: Continuous duty at full load 0-50° C. ambient
POLARITY: Positive or negative output terminal may be grounded
DIMENSIONS: 5¼" W x 8½" H x 11¼" D.

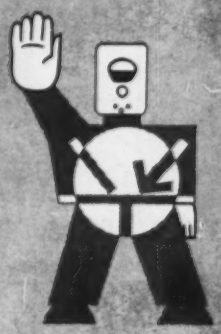
CONSTANT VOLTAGE
Range: 1-40 vdc, 0-0.5 amperes.
Regulation: .05% or 10 millivolts max. for line or load variations.
Ripple: .001% or 500 microvolts max.
Response Time: Less than 50 microseconds.
Source Z: 0.1 ohms to 20 kc, 0.5 ohms to 1 mc.

CONSTANT CURRENT
Range: 25 to 500 milliamperes.
Voltage compliance: Output current constant to full-rated output voltage of 40 volts.
Regulation: .05% or 250 microamperes max., for line or load variations.
Ripple Content: .01% or 25 microamperes max.
Source Impedance: 130,000 ohms approx.

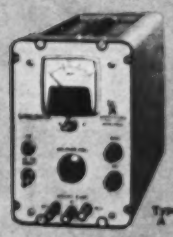
†Prices subject to change without notice.

POWER DESIGNS

Semiconductorized Power Supplies utilize the unique properties of semiconductor devices to create new circuit concepts achieving performance, efficiency and reliability hitherto unattainable. These instruments are NOT conventional transistorized versions of vacuum tube regulators.



ROBOTEC
HEATRAN
VOLTRAN



MODEL 1515
1-15VDC • 0-1.5A
$159.50

MODEL 1515A
1-15VDC • 0-1.5A
$174.50

MODEL 3206
1-32VDC • 0-600MA
$174.50

MODEL 2050
1-20VDC • 5A
$289.50

MODEL 1210
1-12VDC • 0-10A
$349.50

MODEL 1010T
1-100VDC • 0-1A
$374.50

MODEL 3240
1-32VDC • 0-4A
$349.50

MODEL 1057A
1-100DVC • 0-500MA
$239.50

MODEL 5015
1-50VDC • 0-1.5A
$249.50

Dual Voltammeter on all models. Voltmeter only on Model 1515.

SIZES: Models 1515, 1515A and 3206—5¼"W. x 8½"H. x 10"D. **Model 5015**—5¼" W. x 8½"H. x 11¾"D. **Model 2050**—7¼"W. x 8½"H. x 13½"D. **Model 1057A**—5¼"W. x 8½"H. x 11¾"D. **Model 1010T**—7¼"W. x 8½"H. x 13½"D.

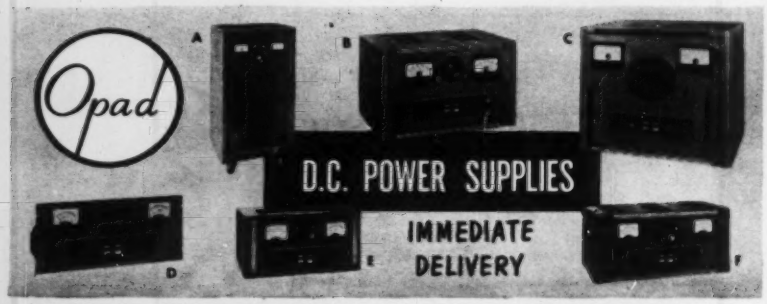
SINGLE OR DUAL UNIT 19" RACK PANEL ADAPTERS AVAILABLE.

INPUT: 105-125VAC 55-440 Cy
REGULATION: .05%
RIPPLE: Model 1515, 1515A: 250 Microvolts
All Others—1.0 Millivolt
Internal Imp: Model 2050, 1210, 1010T, 3240; .005 ohms
All Others—.01 ohms

Power Designs inc. 1700 SHAMES DRIVE WESTBURY, NEW YORK

EDgewood 3-6200 (Long Distance Area Code 516)

CIRCLE 199 ON READER-SERVICE CARD



0-32 V.D.C. 100 Mv. Ripple

Input: 115 V.A.C. 60 Cycles, Single Phase

Amps.	Model	Style	H	W	D	Fig.
5	KM75	Rack	8¾"	19"	9½"	D
	KM75B	Bench	9"	17"	9½"	E
10	KM81	Rack	8¾"	19"	9½"	D
	KM81B	Bench	9"	17"	9½"	E
20	KM87	Rack	8¾"	19"	9½"	D
	KM87B	Bench	10½"	22"	12"	F
40	KM93	Rack	12¼"	19"	13"	—
	KM93B	Bench	14"	22"	15"	B

FEATURES

- Vacuum Varnish Impregnated Magnetic Components.
- 4½" Rectangular 2% Accuracy, D.C. Panel Meters (3½" on small units).
- Controls include power switch, line and load fuses, pilot light, voltage control knob, output binding posts.
- Voltage Regulation: 1/10 Load 35 Volts Full Load 32 Volts
- Panel Type Carrying Handles.
- Convection Cooled Continuous Duty Ratings.

Bulletin No. 102A

0-125 V.D.C. 1% Ripple

Input: 115 V.A.C. 60 Cycles, Single Phase

Amps.	Model	Style	H	W	D	Fig.
2.5	RS10	Rack	8¾"	19"	9"	D
	RS10B	Bench	10½"	22"	12"	F
5	RS20	Rack	10½"	19"	13"	D
	RS20B	Bench	12½"	22"	15"	F
10	RS30	Rack	12½"	19"	13"	—
	RS30B	Bench	14"	22"	15"	B
20	RS40	Rack	17½"	19"	13"	—
	RS40B	Bench	19¼"	19"	15"	C

FEATURES

- Vacuum Varnish Impregnated Magnetic Components.
- Non-Aging Rectifiers (Germanium or Silicon).
- 4½" Rectangular 2% Accuracy D.C. Panel Meters (3½" on small units).
- Controls include Power Switch, Line and Load Fuses, Pilot Light, Voltage Control Knob and Output Binding Posts.
- Both D.C. Terminals above ground and isolated from A.C. Line.
- Panel Type Carrying Handles.
- Convection Cooled Continuous Duty Ratings.

Bulletin No. 204A

0-32 V.D.C. 4% Ripple

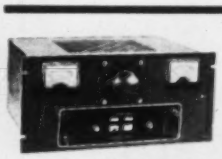
Input: 208 V.A.C. 60 Cycles, 3 Phase

Amps.	Model	Style	H	W	D	Fig.
100	FR100	Floor	46"	22"	18"	A
200	FR200	Floor	46"	22"	24"	A

FEATURES

- Fully Self-Protecting Circuit.
- Pushbutton Operated Magnetic Contactor.
- Indicating Type AC Input Fuses.
- Adjustable Overcurrent Control in D.C. Circuit.
- Thermal Overload Device on Rectifier.
- Overload Warning Light and Reset Button.
- 4½" Rectangular, 2% Accuracy Panel Meters.
- Low Voltage Regulation: Approx. 5-8%
- Ball Bearing Type Casters.
- Input Receptacle and Mating Plug.
- All receptacles, terminals and controls clearly designated.
- Budget Priced.

Bulletin No. 155



NEW! TRANSISTOR REGULATED POWER SUPPLIES

4-32 Volts DC		24-32 Volts DC	
AMPS	MODEL	AMPS	MODEL
1½	TR10	5	BR20
4	TR20	10	BR30
10	TR30	20	BR50
15	TR40	30	BR70
Bulletin No. 105		Bulletin No. 107	

FEATURES

- Regulation ±½% line & load.
- Input 105-125 V. AC. 60 CPS single phase.
- Zener Diode Reference.
- Ripple less than 5 M.V.
- Vacuum varnish impregnated magnetic components.
- Short Circuit Protection.
- Controls include power switch, fuses, pilot light, voltage control knob and output binding posts.
- 2% Accuracy Panel Meters.
- Both output terminals above ground and isolated from A.C. line.
- Panel type carrying handles.
- Continuous duty ratings.
- High efficiency.

GENERAL PURPOSE UNITS

OUTPUT: 0-30 Volts D.C. Unfiltered Full Wave.
INPUT: 115 V.A.C., 60 C.P.S.I.φ.
Model GM72 5 Amperes
Model GM78 10 Amperes
Model GM84 20 Amperes
Model GM90 50 Amperes
FEATURES: 2% accuracy Panel Meters, Line and Load Fuses, Switch, Pilot Light, Binding Posts. Many other standard models available.

Bulletin No. 178A

AIRCRAFT BATTERY SUBSTITUTE

Specifically designed to operate rotating equipment

OUTPUT: 0-30 V.D.C., 20 Amperes.
RIPPLE: Less than 1%.
INPUT: 115 V.A.C., 60 C.P.S.I.φ.
REGULATION: 1/10 Load 35 Volts Full Load 30 Volts
FEATURES: Ammeter overcurrent protection circuit prevents needle 'slam' when starting inverters & motors
MODEL KM88 ...Rack Mount
MODEL KM88B...Bench

Bulletin No. 186A

DUAL RANGE POWER SUPPLY

OUTPUT: 0-32/64 V.D.C., 40/20 Amps.
RIPPLE: Within 1% of aver. DC.
INPUT: 115 V.A.C., 60 C.P.S.I.φ.
FEATURES: Thermal overload protection, indicating line and load fuses, overload warning light, dual range voltmeter.
MODEL KM95 ...Rack Mount
MODEL KM95B...Bench

Bulletin No. 193

OPAD ELECTRIC COMPANY
43-20 WALKER STREET • NEW YORK 13, N. Y.
Telephone WOrth 6-0380

CIRCLE 200 ON READER-SERVICE CARD

Dukane Corp
Dynamic Controls
Dynamics Instrumentation
Dynatronics Inc
Dynex Inc
Eastern Specialty Co
Elcor Div
Elcor Inc
Electric Eye Equip
Electric Regulator
Electro Instruments
Electro Metric Co
Electrodynamic Instr
Electron Arc
Electronic Controls Inc
Electronic Dev Corp
Electronic Instrument
Electronic Measurements
Electronic System Dev
Electronic Tube
Electronics International
Electrosolids Corp
Endevco Corp
FXR Inc
Fairfield Engrg
Fecker Div J W
Federal Tool Engrg
Film Capacitors Inc
Filtron Co
Fluke Mfg Co
Freed Transformer
Gates Electronics
Gates Radio Co
General Devices
GE Apparatus Sales Div
General Nuclear Corp
General Radio
Goslin Electric
Gow-Mac Instrument
Green Rectifier
Gulton Industries
Gyra Electronics
Hamilton Standard Div
Hamner Electronics
Harrison Labs
Hathaway Instruments
Heath Co
Hewlett-Packard
Hewson Co Inc
Hydel Inc
I T T Indus Prods Div
Industrial Rectifier
Industrial Test Equip
Interelectronics
International Resistance
Invar Electronics
Julie Research Labs
Kahn & Co
Kaiser Aircraft & Elx
Kavanau Co
Kay Electric
Kearfott Div
Kepco Inc
Kidde & Co
Kilovolt Corp
Laboratory for Electronics
L A Marche Mfg Co
Lambda Electronics
Leeds & Northrup
Leemath Inc
Ling Electronics
Lundell & Co
Magnetic Controls Co
Magnetic Research Corp
Mallory & Co P R
Marathon Electric
Master Specialties
Med-Tronics Mfg Co
Metrolog Corp
Micro Gee Products
Midwestern Instrs
Millen Mfg Co
Milro Controls
Model Rectifier
Modern Industries
Moeller Instr
Multi-Amp Electronic
NJE Corp
NEFF Instr Corp
Neutronic Associates
North Electric Co
North Hills Electric
North Hills Electronics
Northeast Scientific
Quad Electric
Oregon Electronic Mfg
Ovitron Corp
Owen Labs
P and H Electronics
Pacific Instrument Co
Pacific Technical Co
Packard Bell
Parsons Co Ralph M
Pegasus Labs
Perkin Engrg Corp
Peschel Electronics
Philamon Labs Inc
Philbrick Researches Inc
Philco Corp
Physical Science Corp
Picker X-Ray Corp
Plastic Capacitors Inc
Power Designs
Power-Tronic Systems
Precise Measurements Co
Quan-Tech Labs
RCA Systems Support
R S Electronics Corp
Radiaphone Co
Radio Frequency Labs
Ramm Rectifier Co
Rathbun/Comm Apparatus
Reflectone Electronics
Riverbank Labs
Rixon Electronics
Sangamo Electric Co
Scharvitz Engineering
Schauer Mfg Corp
Schlumberger Corp

SPELLMAN
HIGH VOLTAGE POWER SUPPLIES

MODEL RG-30

Continuously Variable 15-30 KV Regulated DC Power Supply with Regulated Focus Voltage Tap

A continuous duty DC supply with highly filtered outputs and regulations better than 0.5% at 1 ma.—no load to full load. A variable focus tap 4-6 KV for use with 5WP11, 5TP4 and flying spot tubes. Dimensions: 19" wide x 10½" high x 13" deep.
With HV meter $375 Net Less meter $325 Net
MODEL RG-40 is a 20-40 KV unit with same specifications as RG-30 except .7 ma. at 40 KV.
With meter $375 Net Less meter $325 Net

MODEL PN-30 **REVERSIBLE POLARITY**

Continuously Variable 1-30 KV Unregulated DC Power Supply

A light, compact unit in wide use for insulation testing, condenser charging, precipitators and laboratory research. Polarity reversible from front panel. Current output—2 milliamperes at 20 KV: 1 ma. at 30 KV. Input—117V AC 60 cycles. Dimensions: 19" x 10½" x 13" .....$275 Net
Less meter .....$225 Net
MODEL PN-30C—Same as above except automatic overload and reset button provided. Adjustable sensitivity 0.5 ma. to 2.5 ma.
With meter .....$325 Net
Less meter .....$275 Net

SPELLMAN HIGH VOLTAGE COMPANY
1930 Adee Ave., Bronx 69, N. Y.
Kingsbridge 7-0306

CIRCLE 201 ON READER-SERVICE CARD

FROM MILLIWATTS TO KILOWATTS

HIGH VOLTAGE POWER SUPPLIES AND EQUIPMENT

We have sold quantities of these power supplies to laboratories, industrial concerns, the government and universities. Only the best available selected material goes into these units, so that you will have many years of dependable service. Only a few of our standard models are shown below. Quotations on special supplies cheerfully given.

PRECISE MEASUREMENTS COMPANY

HIGH VOLTAGE POWER SUPPLIES

One of the most popular power supplies on the market. Completely redesigned for greater ruggedness and convenience of operation. Widely used for powering electronic equipment and for routine breakdown and insulation testing. Output voltage is well filtered D.C. which is adjustable with convenient front panel control. Input is 115 Volt, 60 cycle A.C. Equipment is available without meter, with one meter (4½"), with two meters, or with larger 6" precision 1% mirror scale movement. Regulated models offer closely stabilized output voltage regardless of line or load changes.

Model		Maximum Voltage	Price	Price Regulated Model
6001	With Kilovolt Meter	1,000	$ 75.00	
6000		2,500	60.00	
6000-A	With Kilovolt Meter	2,500	80.00	$120.00
6005		5,000	75.00	
6005-A	With Kilovolt Meter	5,000	95.00	135.00
6010		10,000	85.00	
6010-A	With Kilovolt Meter	10,000	105.00	145.00
6015		15,000	95.00	
6015-A	With Kilovolt Meter	15,000	115.00	155.00
6025-A	With Kilovolt Meter	25,000	175.00	205.00

MIRROR SCALE HIGHER ACCURACY METERS: Recommended where more exact settings or measurements are needed. Meter size has been increased to 6 inches for easier reading. Price $35.00 additional on any meter equipped model.

TWO METER MODEL ADD $35.00

INDUSTRIAL POWER SUPPLIES

These industrial type power supplies are built for service and efficiency. All are of the transformer type and employ husky components that have been selected for their power handling capacity. Controls are arranged so that operation is greatly simplified and a number of safety features are built in for maximum protection of personnel and equipment. Output is continuously variable from zero to full rated value. Polarity reversing models (as illustrated) can be had at additional cost.

Regulated Types Available

Standard hum level 5% or less. .01% to 1% ripple available. All power supplies have automatic overload cutout control circuits. Regulated models available.

Model	Voltage	Current	Price
F-500V	0-500	3 Amp	$800.00
F-6001	0-1000	2 Amp	975.00
F-6002	0-2000	1 Amp	985.00
F-6003-A1	0-3000	100 MA	375.00
F-6003-AV	0-3000	500 MA	550.00
F-6003-AK	0-3000	1 Amp	1100.00
F-6005-A1-H	0-5000	100 MA	550.00
F-6005-AV	0-5000	500 MA	750.00
F-6005-A1K	0-5000	1 Amp	1200.00
F-6010-A1	0-10,000	100 MA	800.00
F-6020-A05	0-20,000	50 MA	975.00
F-6050-T	0-50,000	½ MA	600.00
F-6100-T	0-100,000	½ MA	1100.00

HEAVY DUTY POWER SUPPLIES

For use in applications where high voltages at extra high currents are required. Illustrated is our 100 KW Model, rated for 0 to 7,000 Volts at 14 Amperes DC. This unit is housed in a single convenient cabinet. Output voltage is regulated against line and load changes. Voltage is smoothly adjustable from zero to full output. Automatic circuits protect against overvoltage or over current conditions, turning off main power in a split second. Use of special transformer construction allows constant load drain at full rated output. All power supplies in this series are available with fixed or adjustable output and with or without regulation.

Model	Voltage	Current
A-10	0-1000	5 amperes
A-30	0-3000	5 amperes
A-31	0-3000	10 amperes
A-32	0-3000	20 amperes
A-50	0-5000	5 amperes
A-51	0-5000	10 amperes
A-72	0-7000	15 amperes
A-100	0-10,000	5 amperes
A-110	0-10,000	10 amperes
A-300	0-30,000	5 amperes

TRANSFORMERS, HIGH VOLTAGE

For experimental, industrial or production applications. These units are small and compact and rated for constant service. Primary designed for 115 Volts 60 Cycle. Secondary is isolated. Only standard models are listed, other voltages and currents available on order.

Model	Voltage	Model	Voltage
1 KVT	1 KV	10 KVT	10 KV
2 KVT	2 KV	15 KVT	15 KV
3 KVT	3 KV	25 KVT	25 KV
5 KVT	5 KV	50 KVT	50 KV

PACKAGED POWER SUPPLIES

These conveniently packaged power units will be found ideal for applications requiring minimum size and weight. Features isolated high voltage terminals permitting either the positive or negative side to be grounded. Rectifier tubes are operated from separate filament transformers so that DC output voltage can be varied from zero to full rated value. Selenium rectifier types have extra cells to assure operation under high line voltage or light loading. All standard units have well filtered DC output. Power packs with AC output available on order.

Model	Output Voltage	Current	Model	Output Voltage	Current
05-KV-5MA	500 Volts DC	5 Ma.	20-KV-1MA	20 KV DC	1 Ma.
1-KV-5MA	1 KV DC	5 Ma.	20-KV-5MA	20 KV DC	5 Ma.
2-KV-5MA	2 KV DC	5 Ma.	30-KV-1MA	30 KV DC	1 Ma.
5-KV-1MA	5 KV DC	1 Ma.	30-KV-5MA	30 KV DC	5 Ma.
5-KV-5MA	5 KV DC	5 Ma.	50-KV-1MA	50 KV DC	1 Ma.
10-KV-1MA	10 KV DC	1 Ma.	50-KV-5MA	50 KV DC	5 Ma.
10-KV-5MA	10 KV DC	5 Ma.	75-KV-1MA	75 KV DC	1 Ma.
15-KV-1MA	15 KV DC	1 Ma.	100-KV-1MA	100 KV DC	1 Ma.
15-KV-5MA	15 KV DC	5 Ma.			

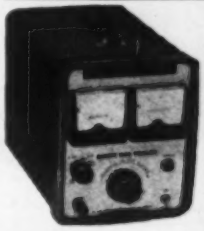
CONSTANT CURRENT POWER SUPPLIES

Designed for application where output current must remain constant regardless of loading resistance changes. Used for magnet fields, plating applications, gaseous lamps. Dependable magnetic current stabilizer has no moving parts, no tubes, no transistors to replace. Simply set current to desired level, no balancing or other adjustments needed. Ideal for lamp operation since operating state ionizing voltage in no way affects lamp current. Standard hum level 5%. Lower hum levels available on order.

Model	Maximum Voltage	Maximum Current
C-25-700	25 Volts	700 Amperes
C-70-70	70 Volts	70 Amperes
C-500-10	500 Volts	10 Amperes
C-Dual 500-10	500 or 1,000 Volts	10 or 20 Amperes
C-800-2	800 Volts	2 Amperes
C-1300-100	1000 Volts	100 Amperes

Duel 500 V - 500 V, 10 Ampere Power Supply. Isolated outputs may be seried or paralleled.

AC INSULATION AND BREAKDOWN TESTERS



Used in testing insulation where AC voltages are desired. Dual instruments are also available which provide choice of AC or DC output with simple toggle switch selection. Units include kilovoltmeter, current meter and automatic overload cutout circuits.

Model	Voltage	VA	AC	AC and DC Price
3000	0 to 3,000	75	$150.00	$ 250.00
3010	0 to 3,000	300	250.00	400.00
3050	0 to 3,000	1,500	500.00	650.00
3100	0 to 6,000	3,000	700.00	1,100.00
5000	0 to 5,000	75	175.00	300.00
1000	0 to 10,000	75	200.00	350.00
1500	0 to 15,000	75	250.00	

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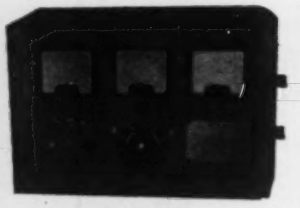

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Electro Instruments
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Lavoie Labs
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Millivac Instr Div
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Precision Apparatus Co
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Biddle Co James G
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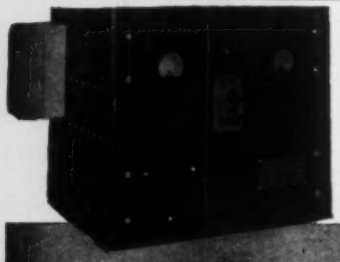
Bytrex Corp



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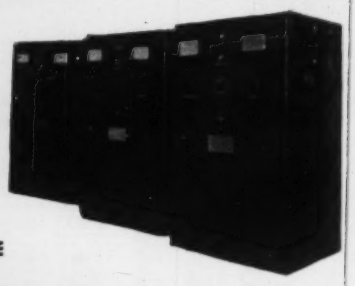

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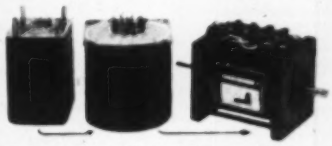

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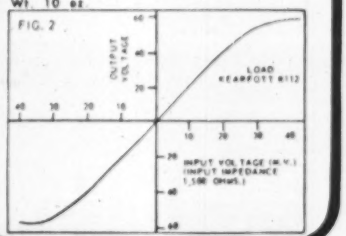
Motor



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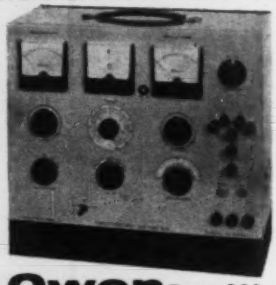

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Electro Instruments
Electronic Instrument
Electronic MRMTS Corp
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Missimers Inc
Monitor Systems Inc
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Electronic Instrument
Electronic MRMTS Corp
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Hewson Co Inc
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Magnaflux Corp
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Narda Ultrasonic
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Natl Ultrasonic
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Princeton Div
Raytheon/Comm Apparatus
Sheffield Corp
Spectrum Instruments
Sturrup Inc
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Fluke Mfg Co
General Radio
Gruenberg Electric
Heath Co
Hewlett-Packard
Hickok Electrical Instr
Industrial Control Co
Jennings Radio Mfg
Kay Electric
Kearfott Div
Marconi Instruments
Measurements Div
Measurements Research
Metronix Inc
Millivac Instr Div
North Atlantic Indus
Phaostron Instr & Elx
Precision Apparatus Co
Research Industrial Lab
Rohde & Schwarz
Seco Electronics
Sierra Electronic Corp
Simpson Electric
Smith-Florence Inc
Southwestern Indus Elx
Sunshine Scientific
Technology Instr (Mass)
Trio Laboratories
Triplett Electl Instr
Welch Mfg Co W M

VOLTAGE COMPARATORS

Anadex Instruments Inc
Control Technology
DJECO
Danner Scientific
Electro Instruments
Fluke Mfg Co
Gray Instrument
Hayden Co A W (Calif)
Julie Research Labs
Kepco Inc
Lavoie Labs
Measurements Research
Non-Linear Systems
Optimized Devices
Performance Measurements
Philco Corp
RCA Systems Support
Simpson Electric
Slaughter Co Inc
Tempo Instrument
Transformers Inc
Wiancko Engrg Co

VOLTAGE, HIGH (above 3,000 volts) MEASURING DEVICES and/or INDICATORS

Allied Radio
Associated Research
Beva Laboratory
Davenport Mfg
Daystrom/Weston
Del Electronics
Dittmore-Freimuth
Electric Eye Equip
Electro Instruments
Epic Inc
Fluke Mfg Co
GE Apparatus Sales Div
Greibach Instrument
Gulton Industries
Hewlett-Packard
Hewson Co Inc
Industrial Devices Inc
Indus Insts Auto
Industrial Instrs Inc
Jennings Radio Mfg
Julie Research Labs
Pearson Electronics
Peschel Electronics
Opad Electric Co
RCA Systems Support
Rawson Electrical Instr
Shallcross Mfg Co
Simpson Electric
Sorensen & Co
Spellman High Voltage
Triplett Electl Instr
WE-Director Systems
WE-Inst & Control Sys

VOLTAGE REGULATORS, Glow Tube

Amperite Co
Brach Mfg Corp
British Industries
Control Panel Corp
DJECO
Davenport Mfg
Kepco Inc
P and H Electronics
Philco Corp
Radiation Research Crop
Raytheon/Indust Comp
Sorensen & Co
Tech Apparatus Bldrs
Wiltec Electronics

VOLTAGE REGULATORS, Line Voltage

Allen-Bradley
Allis-Chalmers
Amelco Inc
Amplifier Corp of Amer
Baird Atomic
Brach Mfg Corp
British Industries
Carruthers & Fernandes
Chicago Std Transformer
Clarostat Mfg
Control Panel Corp
Curtiss Wright
Davenport Mfg
Deltron Inc
DJECO
Electric Regulator
Electro Precision
Electronic Measurements
Engineered Magnetics
Freed Transformer
Gates Radio Co
GE Apparatus Sales Div
GE Specialty Control
GE Voltage Reg Prod
General Radio
Green Rectifier
Gulton Industries
Hoffman Electronics
Kato Engrg Co
Kavanli Co
Kepco Inc
Magnetic Controls Co
Magnetic Research Corp
Marathon Electric
Milro Controls
Nacimco Products
National Spectrographic
NJE Corp
Opad Electric Co
P and H Electronics
Perkin Engrg Corp
Philco Corp
Power Designs
Power-Tronic Systems
Raytheon/Comm Apparatus
Sel-Rex Corp
Sola Electric
Sorensen & Co
Sterling Transformer
Superior Electric Co
Tech Apparatus Bldrs
Technique Associates
Tel-Instrument Elx
Thermo Electric Co
Torwico Electronics
Valor Instruments
Varo Mfg Co
Vickers Electric Prods Div
Westinghouse Director Sys

VOLT-AMMETERS

Allied Radio
Beede Electrical Instr
British Industries
Columbia Electric
Daystrom/Weston
Dittmore-Freimuth
Engelhard Industries
Epic Inc
Federal Pacific
Feller Engrg & Mfg
GE Apparatus Sales Div
Greibach Instrument
Hickok Electrical Instr
International Instr
Natl Electronics (Wyo)
Page Electrical Instrs
Phaostron Instr & Elx
Philco Corp
Physics Research Labs
Precision Apparatus Co
Pyramid Instr Corp
Q V S Inc
Rawson Electrical Instr
Sangamo Electric Co
Schauer Mfg Corp
Simpson Electric
Smith-Florence Inc
Sunshine Scientific
Triplett Electl Instr
Waldom Electronics
Welch Mfg Co W M
Westberg Mfg Co
Westinghouse Electric
Yokogawa Electric Works

VOLT-AMPERE-HOUR METERS

GE Apparatus Sales Div
Philco Corp
Simpson Electric
Waldom Electronics
WE-Inst & Control Sys
Welch Mfg Co W M

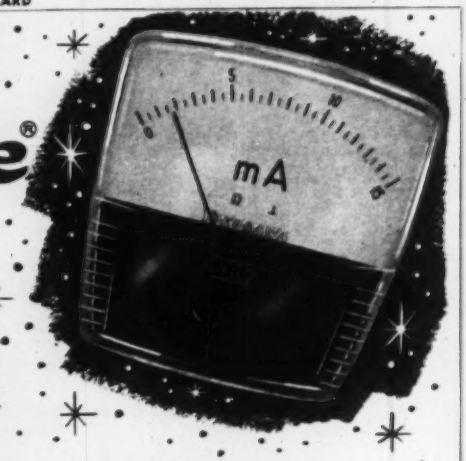
VOLT-AMPERE METERS, Reactive

Daystrom/Weston
Dittmore-Freimuth
Federal Pacific
GE Apparatus Sales Div
Hickok Electrical Instr
Philco Corp
Physics Research Labs
Sangamo Electric Co
Simpson Electric
Sunshine Scientific
Triplett Electl Instr
Waldom Electronics
Welch Scientific
Westinghouse Electric

VOLTMETERS, AC, Rectifier

Adage Inc
Allied Radio
Assembly Products Inc
Beckman/Helipot Div
Beede Electrical Instr
British Industries
Burton-Rogers
Consol Electrodynamics
Cubic Corp
Daystrom/Weston
Dejur Amsco
Dittmore-Freimuth
Electric Dev & Mfg
Electronic Instrument
Epic Inc
Esterline Angus
Federal Pacific
Fluke Mfg Co
GE Apparatus Sales Div
Greibach Instrument
Heath Co

The Prince® is here...



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System 40 — $119.95

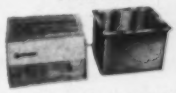
TYPICAL COMPETITIVE PRICE RANGE $187.50-350

Generator: Model G-40C1 40 watt average, 150 watt peak power output, 110V-60c input.
Tank: Model T-40C1 full ½ gal. stainless steel tank, 5⅝"L x 5¼"W x 4"D.
Extra Tanks: Model T-40C1: $49.95 ea. Model T-40C2 (¾ gal.) 8⅛"L x 5¼"W x 4"D.: $59.95 ea.
Junction Box: Model TSJB-3L (for alternate operation of 2 or 3 T-40C1 or T-40C2 tanks): $17.95.

System 520 — $999.95

TYPICAL COMPETITIVE PRICE RANGE $1325-1750

Generator: Model G-520C1 520 watt average, 2080 watt peak power output, 110V-50/60c input.
Tank: Model T-520C1 full 15 gal. stainless steel tank 20"L x 10"W x 10"D.
Extra Tanks: Model T-520C1: $399.95 ea. Model T-520C2 (10 gal.) 40"L x 5"W x 10"D.: $599.95 ea.
Junction Box: Model TSJB-3 (for alternate operation of 2 or 3 T-520C1 or T-520C2 tanks): $17.95.



System 80 — $219.95

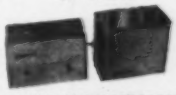
TYPICAL COMPETITIVE PRICE RANGE $340-597

Generator: Model G-80C1 80 watt average, 320 watt peak power output, 110V-50/60c input.
Tank: Model T-80C1 full 1½ gal. stainless steel tank 12"L x 6"W x 6"D.
Extra Tanks: Model T-80C1: $89.95 ea. Model T-80C2 (2 gal.) 12"L x 6"W x 9"D.: $179.95 ea.
Junction Box: Model TSJB-3 (for alternate operation of 2 or 3 T-80C1 or T-80C2 tanks): $17.95. Model JB-3 (for simultaneous operation of 2 or 3 T-40C1 or T40C2 tanks): $12.95.

System 1040 — $1999.95

TYPICAL COMPETITIVE PRICE RANGE $2275-2500

Generator: Model G-1040C1 1040 watt average, 4160 watt peak power output, 220V-50/60c, 1Φ input.
Tank: Model T-1040C1 full 30 gal. stainless steel tank 24"L x 10"W x 10"D.
Extra Tanks: Model T-1040C1: $799.95 ea. Model T-1040C2 (54 gal.) 43"L x 10"W x 10"D.: $999.95 ea.
Junction Box: Model TSJB-3H (for alternate operation of 2 or 3 T-1040C1 or T-1040C2 tanks): $17.95.



System 320 — $349.95

TYPICAL COMPETITIVE PRICE RANGE $675-1040

Generator: Model G-320C1 320 watt average, 1280 watt peak output, 110V-50/60c input.
Tank: Model T-320C1 full 5 gal. stainless steel tank, 14"L x 10"W x 9"D.
Extra Tanks: Model T-320C1: $199.95 ea. Model T-320C2 (7 gal.) 14"L x 10"W x 12"D.: $299.95 ea.
Junction Box: Model TSJB-3 (for alternate operation of 2 or 3 T-320C1 or T-320C2 tanks): $17.95.

System 3000 — $3999.95

TYPICAL COMPETITIVE PRICE RANGE $4450-4900

Generator: Model G-3000C1 3000 watt average, 12000 watt peak power output, 220V-50/60c, 1Φ input.
Tank: Model T-3000B1 full 75 gal. stainless steel tank 54"L x 24"W x 18"D.
Extra Tanks: Model T-3000C1: $1750 ea.
Junction Box: Model TSJB-3H (for alternate operation of 2 or 3 T-3000C1 tanks): $17.95.

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HR-92 X-Y
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Unconditionally
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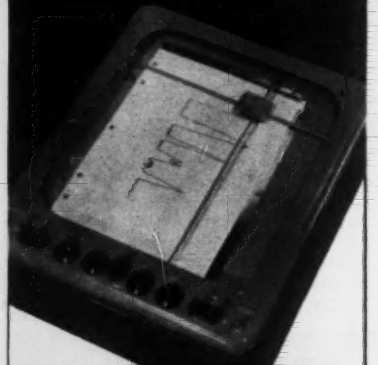

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- Amplifiers easily removed if servicing ever becomes necessary. Electrical connections all contained in two plugs for each amplifier.
- Each amplifier channel (including transformer power supply) independent of rest of system.

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MO 7-7405

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International Instruments
Marconi Instruments
Mastercraft Instr Co
Meters Inc
M-H Marion Instr Div
Motorola C & E
Natl Electronics (Wyo)
Pace Electrical Instrs
Parker Electronics
Phaostron Instr & Elx
Philco Corp
Physics Research Labs
Precision Apparatus Co
Q V S Inc
Simpson Electric
Sunshine Scientific
Trio Laboratories
Triplett Electl Instr
WacLine Inc
Waldom Electronics
WE-Inst & Control Sys
Welch Mfg Co W M
WE Inst & Control Sys
Westinghouse Electric
Yokogawa Electric Works

VOLTMETERS, Digital

Adage Inc
Anadex Instruments Inc
Analogue Controls Inc
B and H Instr Co Inc
Beckman/Berkeley Div
Beckman Systems Div
Computer Equipment
Cubic Corp
Davenport Mfg
Dymec
Eldorado Electronics
Electro Instruments
Electro-Logic Corp
Electronic Associates
Electronic Computer Co
Epsco Inc
Fluke Mfg Co
Hewlett-Packard
Howell Instruments
Martindale Electric
Moseley Co F L
Motorola Military Elx
Non-Linear Systems
Philco Corp
Physical Sciences Corp
Servonics Inc
Systron Corp
Systron-Donner
Vidar Corp
Westronics Inc

VOLTMETERS, Electrostatic

Custom Scientific Instrs
Epic Inc
Ferranti Electric
Halex Inc
Natl Electronics (Wyo)
Philco Corp
Rawson Electrical Instr
Simpson Electric
Stiehl Co Herman
Sunshine Scientific
WacLine Inc

VOLTMETERS, Indicating and Recording

Avtron Manufacturing
Barber-Colman
Beckman/Berkeley Div
Beckman Sci & Proc Div
Bristol Co
Burton-Rogers
Columbia Electric
Computer Equipment
Daystrom/Weston
Dymec
Electric Dev & Mfg
Electro Instruments
Epic Inc
Esterline-Angus
Federal Pacific
Fluke Mfg Co
GE Apparatus Sales Div
General Radio
Houston Instrument
Howell Instruments
Ideal Precision Meter
M H Marion Instr Div
Philco Corp
Rawson Electrical Instr
Sanborn Company
Sangamo Electric Co
Simpson Electric
Smith-Florence Inc
Sunshine Scientific
Texas Instruments Inc
Triplett Electl Instr
Voltron Products
WE-Inst & Control Sys
Welch Mfg Co W M
Westinghouse Electric
Westronics Inc
Wheelco Instruments Div

VOLTMETERS, Laboratory Standard

Beckman/Hellpot Div
Bruno-New York Inds
Consol Electrodynamics
Davenport Mfg
Daystrom/Weston
Electro Instruments
Electro Metric Co
Electronic Applications
Epic Inc
Federal Pacific
Fluke Mfg Co
GE Apparatus Sales Div
Hallamore Electronics
Hickok Electrical Instr
Ideal Precision Meter
Julie Research Labs
Leeds & Northrup
Muirhead Instrs
Philco Corp
Physics Research Labs
Rawson Electrical Instr
Simpson Electric
Smith-Florence Inc
Sunshine Scientific
Trio Laboratories
WE-Inst & Control Sys
Welch Mfg Co W M
Westinghouse Electric
Yokogawa Electric Works

VOLTMETERS, Micro, RF, Millivolts and Microvolts

Boonton Electronics
British Industries
Bruno-New York Inds
Daystrom/Weston
Dynamics Instrumentation
K-H Research Labs
Electric Dev & Mfg
Electro Instruments
Electronic Computer Co
Epic Inc
Federal Pacific
Flow Corporation
Fluke Mfg Co
Greibach Instrument
Hewlett-Packard
Hickok Electrical Instr
Howell Instruments
Ideal Precision Meter
International Instr
Marconi Instruments
Mastercraft Instr Co
Measurements Research
Millivac Instr Div
M-H Boston Div
M-H Marion Instr Div
Moseley Co F L
Motorola C & E
Natl Electronics (Wyo)
Pace Electrical Instrs
Phaostron Instr & Elx
Philco Corp
Physics Research Labs
Precision Apparatus Co
Q V S Inc
Rawson Electrical Instr
Sierra Electronic Corp
Simpson Electric
Smith-Florence Inc
Southwestern Indus Elx
Stoddart Aircraft Radio
Sunshine Scientific
Trio Laboratories
Triplett Electl Instr
WacLine Inc
Welch Mfg Co W M
Westinghouse Electric
Yokogawa Electric Works

VOLTMETERS, Millivoltmeters, AC, Rectifier

Assembly Products Inc
Barber-Colman
Beckman/Hellpot Div
Beede Electrical Instr
Burton-Rogers
Communication Meas Lab
Cubic Corp
Daystrom/Weston
Dejur Amsco
K-H Research Labs
Electric Dev & Mfg
Epic Inc
Federal Pacific
Flow Corporation
Fluke Mfg Co
GE Apparatus Sales Div
Greibach Instrument
Hathaway Instruments
Hewlett-Packard
Hickok Electrical Instr
Howell Instruments
Ideal Precision Meter
Marconi Instruments
Mastercraft Instr Co
Meters Inc
Millivac Instr Div
Motorola C & E
Natl Electronics (Wyo)
Pace Electrical Instrs
Phaostron Instr & Elx
Philco Corp
Physics Research Labs
Precision Apparatus Co
Q V S Inc
Simpson Electric
Smith-Florence Inc
Southwestern Indus Elx
Sunshine Scientific
Trio Laboratories
Triplett Electl Instr
WacLine Inc
Waldom Electronics
Wavefornns Inc
Welch Mfg Co W M
Westinghouse Electric
Yokogawa Electric Works

VOLTMETERS, Oxide Rectifier

Allied Radio
Beckman/Hellpot Div
Beede Electrical Instr
Daystrom/Weston
Federal Pacific
Hickok Electrical Instr
Ideal Precision Meter
Meters Inc
M-H Marion Instr Div
Pace Electrical Instrs
Philco Corp
Physics Research Labs
Precision Apparatus Co
Q V S Inc
Sunshine Scientific
WacLine Inc
WE Inst & Control Sys
Welch Mfg Co W M
Westinghouse Electric

VOLTMETERS, Peak

Allied Radio
Associated Research
Curtiss-Wright
Davenport Mfg
Electro Instruments
Electronic Instrument
Electronic Mamts Corp
Federal Pacific
General Radio
Hickok Electrical Instr
Measurements Div
Philco Corp
Rawson Electrical Instr
WacLine Inc

VOLTMETERS, Thermionic Rectifier

Berkshire Laboratories
Daystrom/Weston
Philco Corp
U S Semiconductor Prods

VOLTMETERS, Thermo

Beckman/Hellpot Div
Beede Electrical Instr
Daystrom/Weston
Federal Pacific
Flow Corporation
Greibach Instrument
Holt Instrument Labs
Howell Instruments
Natl Electronics (Wyo)
Philco Corp
Q V S Inc
Rawson Electrical Instr
Sangamo Electric Co
WacLine Inc

VOLT-OHMMETERS

Allied Radio
Associated Research
British Industries
Cubic Corp
Daystrom/Weston
Electro Instruments
Electro-Logic Corp
Electronic Associates
Electronic Instrument
Epic Inc
Federal Pacific
Greibach Instrument
Heath Co
Hewlett-Packard
Hickok Electrical Instr
Instrument Laboratories
International Instr
Measurements Div
Natl Electronics (Wyo)
Philco Corp
Precision Apparatus Co
Pyramid Instr Corp
Q V S Inc
Simpson Electric
Southwestern Indus Elx
Stiehl Co Herman
Sunshine Scientific
Triplett Electl Instr
Vidar Corp
WE-Inst & Control Sys
Welch Mfg Co W M

Volt-Ohm-Milliammeters

Allied Radio
Air-O-Tronics Engrg
British Industries
Daystrom/Weston
Electro-Logic Corp
Electronic Instrument
Electronic Mamts Corp
Epic Inc
Federal Pacific
Greibach Instrument
Heath Co
Hewlett-Packard
Hickok Electrical Instr
International Instr
Martindale Electric
Meters Inc
Millivac Instr Div
Natl Electronics (Wyo)
Philco Corp
Physics Research Labs
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Southwestern Indus Elx
Sunshine Scientific
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Vidar Corp
WE-Inst & Control Sys
Welch Mfg Co W M
Westinghouse Electric
Yokogawa Electric Works

VSWR INDICATORS

Alford Mfg
Allied Radio
Bendix Scintilla Div
British Industries
Calif Technical Indus
Canadian Marconi
Cubic Corp
Douglas Microwave Co
Edison Industries T A
Electro Impulse Lab
F & R Inc
General Radio
Hewlett-Packard
Marconi Instruments
Narda Corp
PRD Electronics
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Research Council Inc
Rixon Electronics
Spectra Electronics
Technical Material
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Waveline Inc

WATTHOUR METERS

Ferranti Electric
GE Apparatus Sales Div
Hickok Electrical Instr
Sangamo Electric Co
Simpson Electric
Westinghouse Electric

WATTHOUR METER TESTERS

Eastern Specialty Co
Knopp Inc
Multi-Amp Electronic
Sangamo Electric Co
Sorensen & Co
States Company

WATTMETERS, Clamp Type

GE Apparatus Sales Div
Hickok Electrical Instr
Sunshine Scientific

WATTMETERS, Electrostatic

Hickok Electrical Instr

WATTMETERS, Indicating

Assembly Products Inc
Borg-Warner Controls
Daystrom/Weston
Electric Regulator
Electro Impulse Lab
Epic Inc
Federal Pacific
Fluke Mfg Co
GE Apparatus Sales Div
Hickok Electrical Instr
Martindale Electric
Industrial Test Equip
Natl Electronics (Wyo)
Physics Research Labs
Rawson Electrical Instr
Sangamo Electric Co
Simpson Electric
Sunshine Scientific
Triplett Electl Instr
WE-Inst & Control Sys
Welch Mfg Co W M
Westinghouse Electric

WATTMETERS, Laboratory Standard

Bendix Scintilla Div
Borg-Warner Controls
Daystrom/Weston
Electronic Applications
Epic Inc
Federal Pacific
GE Apparatus Sales Div
Hickok Electrical Instr
Physics Research Labs
Rawson Electrical Instr
Sierra Electronic Corp
Simpson Electric
Sunshine Scientific
Waveline Inc
Weinschel Engrg
Westinghouse Electric

WATTMETERS, Microwave

Amerac Inc
Bendix Scintilla Div
Borg-Warner Controls
Brunswick Instruments
Canadian Marconi
Chomalloy Electronics
Control Electronics
Cubic Corp
Douglas Microwave Co
Electro Impulse Lab
Electronic Applications
Energy Kontrols
Hewlett-Packard
Melivaine G T
Rohde & Schwarz
Sierra Electronic Corp
Sperry Microwave
WE-Inst & Control Sys
Waveline Inc
Weinschel Engrg

WATTMETERS, Reactive

Daystrom/Weston
Federal Pacific
GE Apparatus Sales Div
Physics Research Labs
WE-Inst & Control Sys
Westinghouse Electric

WATTMETERS, Recording

Daystrom/Weston
Esterline-Angus
GE Apparatus Sales Div
Hathaway Instruments
Leeds & Northrup
Offner Electronics
Sanborn Company
Sangamo Electric Co
WE-Inst & Control Sys
Westinghouse Electric
Westronics Inc

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Amplifier Corp of Amer
D & R Ltd
Electric Eye Equip
Sterling Precision

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Seimens & Co
Universal X-Ray Prods

X-Y Recorders

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Alden Electronic
American Tradair
Bristol Co
Calif Computer Prods
Electro Instruments
Electronic Associates
Engis Equipment
Genesys Corp
Gerber Scientific Inst
Gilmore Industries
Houston Instrument
Hughes Products
Leeds & Northrup
Librascope Div
Link Div
Mast Development
Milgo Electronic
M-H Brown Instrs Div
Moseley Co F L
Phoenix Precision Instr
Radiation Inc
Sanborn Company
Seiscor Div
Technitrol Engrg
Telectro Industries

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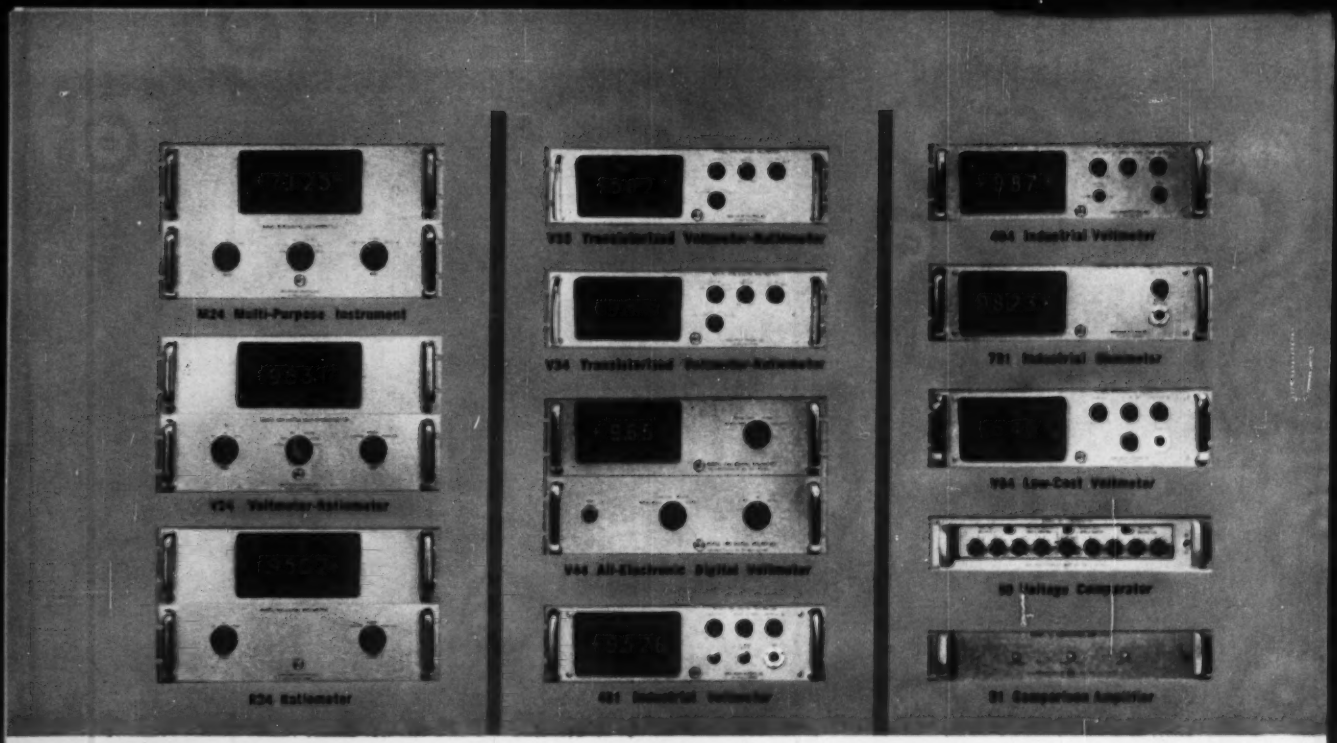

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M24 Multi-Purpose Instrument—Measures DC voltage from ±.0001 to ±999.9, DC voltage ratio to ±.9999, resistance from 0.1 ohm to 1 megohm . . . 1/3 second balancing time . . . with accessories, measures AC voltage or AC ratio, low-level DC . . . completely automatic . . . output for data logging . . . transistorized circuitry, mercury-wetted relays . . . recommended for measuring and data logging demanding best combination of reliability, accuracy, speed and versatility — missile systems checkout, industrial electronic systems, unattended data logging, quality control, laboratory uses. **Complete $5,650**

V24 Voltmeter-Ratiometer — Same basic features, specifications and applications as the M24 except it does not measure resistance. **Complete $4,950**

R24 Ratiometer—Measures DC ratio with ranges of ±.9999/9.999 . . . same basic features as M24 and V24. Designed specifically for analog computer use. **Complete $4,650**

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For Additional Information . . . contact your nearest NLS representative or write NLS for complete catalog section on specific instruments of interest to you. Specifications and prices are subject to change without notice.

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4

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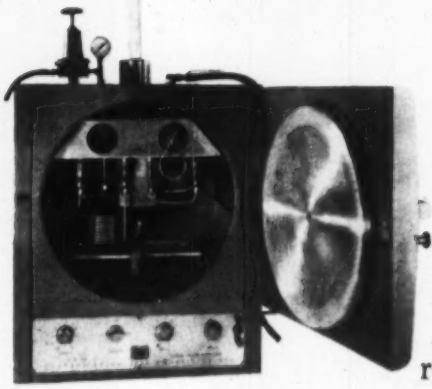

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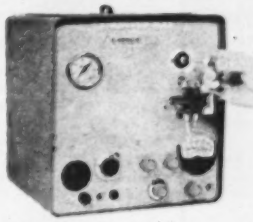

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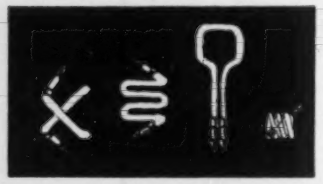

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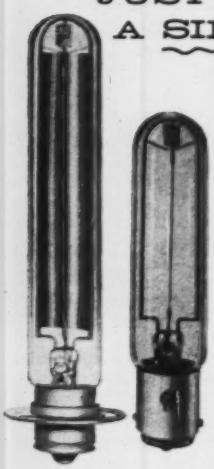
Corning Glass
Fish-Schurman Corp
Fisher Scientific
GRS Corp
Greiner Co. Emil
Grisbel Co
Heiligs Inc
Labglass Inc
Martin & Co
Microchemical Specialties
Nester Co L G
Philadelphia Scien Glass
Porter Inc George K
Precision Glass Products
Smith Inc Arthur F
Stanford Glassblowing
Welch Mfg Co W M
Will Corporation

GLOSS METERS (see also Paint Test Instruments)
Alfa American Corp
Allegany Instrument
Epic Inc
Gaertner Scientific
Golden Instruments
Nurnberg Scientific
Pfaltz & Bauer
Schuco Scientific
Testing Machines Inc
Welch Mfg Co W M

GONIOMETERS
Engis Equipment
Ercona Corp
Gaertner Scientific
GE X-Ray Dept
Gurley W & L E
Jarrell Ash Co
Keuffel & Esser
La Pine and Co
Picker X-Ray Corp
Stocker & Yale

GRAIN TEST INSTRUMENTS
Atkins Technical Inc
Brabender Instr C W
Grain Lab Equip
Marshall Instrs
Ohaus Scale Corp
Philadelphia Scien Glass
Torsion Balance Co

JUST A SINGLE THREAD OF LIGHT . . .



Two lamps designed for use with punch cards or tape. One at left includes non-reflective shield.

The light that activates photo-electric cells through punch cards or tapes must emanate from a perfectly straight, single line source. Any deviation from a straight line, obviously would cause inaccuracies.

Chicago Miniature's engineers were called upon to design such a lamp for the input device of an air traffic control system used for the instantaneous computation of aircraft positions. Not only was a single wire, perfectly straight filament needed but, in addition the lamp was required to withstand repeated 30G shocks delivered at 90° angle!

This problem, typical of many presented to and solved by Chicago Miniature Lamp Works, was met by the 3-way spring suspension of the filament. To eliminate any possibility of reflections from the glass envelope, a non-reflective black shield can be added.

Chicago Miniature's specialized engineering ability and half century of experience prove invaluable in the production of lamps to meet such exacting demands. Its complete line of standard lamps are manufactured with the same care and precision.

Write For Standard Lamp Data Book

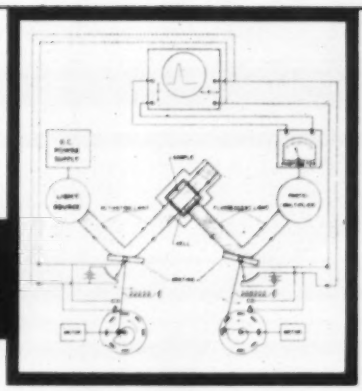
1910 1960

CHICAGO MINIATURE LAMP WORKS
1522 No. Ogden Ave. Chicago 10, Ill.

CIRCLE 219 ON READER-SERVICE CARD

OSRAM XENON

PROVIDES THE ENERGY TO HELP *Solve* AN INSTRUMENT DESIGN PROBLEM:



Problem:

Filter type instruments were not sufficiently sensitive for the accurate measurement of minute traces of fluorescent materials. Such measurements, it was believed would supply important data for the cataloging of compounds, for clinical tests, and would even aid medical diagnosis. To provide the measurements needed, development work on a new type spectrophotofluoremeter was begun. A big stumbling block proved to be the selection of a compact white light (point) source of sufficient intensity and also with a good ultra violet continuum.

LAMP TYPE	ARC SIZE (in inches)	ARC BRIGHTNESS (Candles per Sq. cm.)	LUMINOUS FLUX (Lumens)
SHORT ARCS			
XBO- 150W AC-DC	.109		3,200
XBO- 450W DC	.047 x .094	30,000	13,500
XBO- 900W DC	.067 x .134	40,000	32,000
XBO-1600W DC	.079 x .158	65,000	70,000
LONG ARCS			
*XBF-6000 AC	4-5/16	3,000	215,000
*XBF-6001 DC	4-5/16	4,500	205,000

**Available in clear and with UV transmissive outer cylinder. This type has recently been redesigned and is now available with a replaceable arc burner.*

Solution:

The Osram Xenon Lamp XBO 150W shown at the left provided the solution. It offered a high intensity, high brightness white light (point) source and it also filled the requirements for a good ultra violet continuum. In addition, its small size and efficient heat dissipation allowed for compact streamlined design, easy assembly, and trouble free maintenance. Osram Xenon Lamps are available in both short arc (point source) and long arc (diffuse source). They are available from stock in Newburgh, New York as listed at the left.

If you have a problem requiring a white light source (6000° K. either point or diffuse) write us for recommendations and engineering assistance.

Manufactured in Germany.

For prices, more complete detail, the cost of auxiliary equipment, O.E.M. prices and quantity discounts, please address correspondence to:

P.O. BOX 950 **MACBETH SALES CORPORATION** NEWBURGH, N. Y.

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CIRCLE 220 ON READER-SERVICE CARD

GRATING, Diffraction, Echelon
Baird-Atomic Inc
Bausch & Lomb
Diffraction Prod
Engis Equipment
Jarrell Ash Co
Welch Mfg Co W M

GREASE TESTING INSTRUMENTS
Apex Scientific Co
Brabender Instr C W
Electric Hotpack
Fisher Scientific
Greiner Co Emil
Koehler Instr Co
Labline Inc
Nurnberg Scientific
Precision Scientific Co

INFRARED DETECTORS
Airesearch Mfg Co
Baird-Atomic Inc
Barnes Engineering
Bausch & Lomb
Beckman Sci & Proc Div
Bulova Research
Corning Glass
Cramer Controls Corp
Daystrom/Weston
Designers for Industry
Eastman Kodak
Energy Kontrols
Engis Equipment
GE Specialty Control
General Electrodynamics
Hughes Products
Infrared Industries
Kollsman Instr Corp
Leeds & Northrup
Librascope Div
Mellvaine O T
Mine Safety Appliances
M-H Aeronautical Div
Motorola Military Elx
Ohio Semiconductors
Philco Corp
RCA Defence Electronic
Radiation Electronics
Raytheon/Equipt Div
Raytheon Microwave
Research Council Inc
Semi-Elements Inc
Tri-Tronics Co
Utechnics Inc
WE-Electronic Tube
Zenith Optical Lab

INFRARED SOURCES
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Baird Atomic Inc
Barnes Engineering
Beone Instrument
Cooper Development
Daystrom/Weston
Engelhard Industries
Engis Equipment
General Mills Inc
Greiner Co Emil
Hanovia Lamp Div
Infrared Industries
Jarrell Ash Co
Kemlite Labs
Leeds & Northrup
Mine Safety Appliances
Motorola Military Elx
National Standard Elx
Radiation Electronics
Semi-Elements Inc
Strong Electric Corp
Tri-Tronics Co
Universal Match
Utechnics Inc
WE-Lamp Div

ION EXCHANGE COLUMNS
Barnstead Still
Greiner Co Emil
Lamotte Chemical Prods
Scientific Glass App

IONIZATION CHAMBERS FOR RADIOACTIVITY & GAS ANALYSIS
Applied Physics Corp
Curtiss Wright
Electronics International
GE X-Ray Dept
Henson Co Fred C
Jarrell Ash Co
Land-Air Inc
Landsverk Electrometer
Mine Safety Appliances
Nuclear-Chicago
Nuclear Corp of Amer
Nuclear Elx Corp
Nuclear Measurements
Nuclear Ohio
Ohmart Corp
Philco Corp
Picker X-Ray Corp
Radiation Counter Labs
Radiation Instr Dev La
Research Council Inc
Riggs Nucleonics
Special Instruments Lab
Tracerlab Inc
Victoreen Instrument Co

KYMOGRAPHS
Instrumentation Assoc
Lafayette Instr
Phipps & Bird

LABORATORY FURNITURE
Blickman Inc S
Duralab Equip
Fisher Scientific
Greiner Co Emil
Labline Inc
Laboratory Furniture
Metalab Equipment
Nurnberg Scientific
Will Corporation

LACTOMETERS
Alfa-American Corp
Greiner Co Emil
Griebel Co
Nurnberg Scientific

LAUNDERING TEST INSTRUMENTS
Atlas Elec Devices
Automation Gages
Nucleonic Corp of Amer
Taylor & Co W A

LIGHT SOURCES
Allied Radio
Amglo Corp
Avco Corp
Baird-Atomic Inc
Beckman & Whitley
Boone Instrument
Bushnell & Co D P
Chicago Miniature Lamp
Fisher Scientific
Gaertner Scientific
Gates & Co Inc
Glat-Man Corp
Gordon Enterprises
Hanovia Lamp Div
Jarrell Ash Co
Kemlite Labs
Phoenix Precision Instr
Photobell Co
Porta Trace Inc
Radiation Instr Dev La
Scientific Industries
Spectra Electronics
Strong Electric Corp
Tri-Tronics Co
Ultra-Violet Prods
US Radium Corp
WE-Lamp Div

MACHINES, Lathes, Glass Working
Alfa-American Corp
Fisher Scientific
Mico Instr Co
Nurnberg Scientific
Palos Optical Co
Taber Instrument

MALT TESTING APPARATUS
Brabender Instr C W
Martin & Co H S

MANIPULATORS, Remote
Burton Mfg Co
Control (see also Micromanipulators)
Central Res Labs
Custom Scientific Instrs
Electric Regulator
General Mills Inc
Greiner Co Emil
Microchemical Specialties
Picker X-Ray Corp
Stoelting Co C H

MEDICAL INSTRUMENTS & EQUIPMENT, Including Electromedical
AC-Lab Equipment
Advanced Instruments
American Cystoscope
American Electronic Labs
American Tradair
Baird-Atomic Inc
Beckman Instruments
Biophysical Electronics
Borg-Warner Controls
Bracks-Seib X-Ray
Bulova Research
Burton Mfg Co
Coleman Instruments Inc
Consol Electrodynamics
Decker Corp
Dynisco Inc
Eder Instrument
Eldorado Electronics
Electric Hotpack
Electro-Medical Lab
Engelhard Industries
GE X-Ray Dept
Gyrex Corp
Hanovia Lamp Div
I T T Indus Prods Div
Instrumentation Assoc
Labline Inc
Lafayette Instr
Med-Tronics Mfg Co
Microchemical Specialties
M-H Holland Div
Nucimco Products
Natl Instrument Labs
Nuclear-Chicago
Nuclear Corp of Amer
Nuclear Elx Corp
Nuclear Ohio
Nucleonic Corp of Amer
Offner Electronics Inc
Pacific Technical Co
Philco Corp
Photron Instr Co
Picker X-Ray Corp
Pimex Inc
Process & Instruments
Radiation Electronics
Rosemount Engrg Co
Sage Instruments
Sanborn Company
Schuco Scientific
Spectrum Instruments
Statham Instruments
Taber Instrument
Technitrol Engrg
Telechrome Mfg Corp
Texas Instruments Inc
Tracerlab Inc
Translator Applications
Ultra-Violet Prods
Victory Engrg Corp
Yellow Spring Instr

MELTING POINT APPARATUS
Advanced Instruments
Automation Products
Epic Inc
Fisher Scientific
Greiner Co Emil
Koehler Instr Co
La Pine and Co
Martin & Co H S
Natl Instrument Co
Nurnberg Scientific
Pacific Transducer Corp
Parr Instrument Co
Pfaltz & Bauer
Schuco Scientific
Scientific Glass App
Strong Electric Corp

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Bausch & Lomb
Bently Scientific
Burrell Corp
Ercona Corp
Fisher Scientific
Pfaltz & Bauer
Philco Corp
Precision Scientific Co
Unitron Instrument
Zeiss Inc Carl

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American Optical Co
Buhl Optical Co
Custom Scientific Instrs
Ercona Corp
Greiner Co Emil
Microchemical Specialties
Pfaltz & Bauer
Process & Instruments
Stocker & Yale
Stoelting Co C H

MICROSCOPES AND ACCESSORIES
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Bausch & Lomb
Buhl Optical Co
Bushnell & Co D P
Edmund Scientific
Engis Equipment
Epic Inc
Ercona Corp
Fish-Schurman Corp
Gaertner Scientific
Graf-Apsco Co
Greiner Co Emil
Lynn Robert M
Natl Instrument Co
Nurnberg Scientific
Pacific Transducer Corp
Pfaltz & Bauer
Sanders Labs
Schuco Scientific
Stocker & Yale
Testing Machines Inc
Unitron Instrument
Welch Mfg Co W M
Zeiss Inc Carl

MICROSCOPES, Electron
American Optical Co
Bendix Cininnati Div
Ercona Corp
GE X-Ray Dept
Greiner Co Emil
Natl Instrument Labs
RCA Defence Electronic
Telechrome Mfg Corp

MICROTOMES
American Optical Co
Bausch & Lomb
Bushnell & Co D P
Cambridge Instrument
Custom Scientific Instrs
Graf-Apsco Co
Greiner Co Emil
Instrumentation Assoc
Mico Instr Co
Natl Instrument Co
Nurnberg Scientific
Pfaltz & Bauer
Process & Instruments
Schuco Scientific
Servall Inc Ivan

MILK TEST INSTRUMENTS
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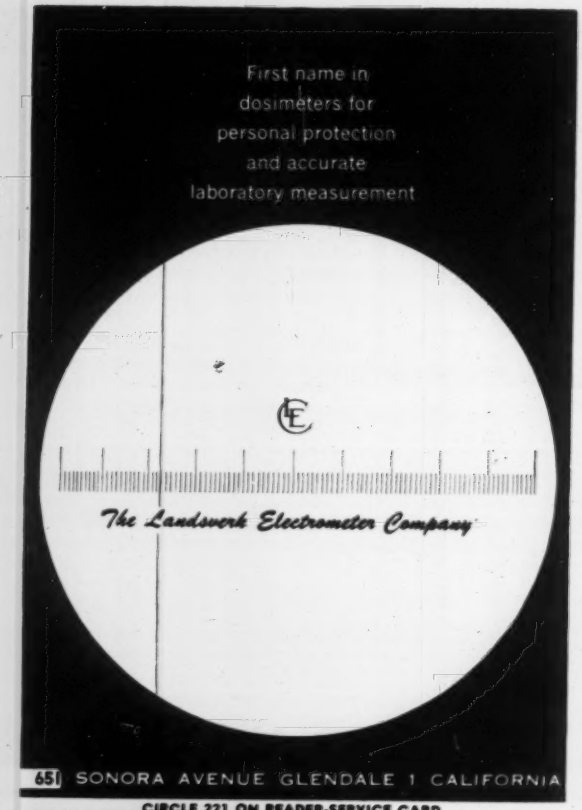
Alfa-American Corp
Automation Products
Brabender Instr C W
Controls for Radiation
Fisher Scientific
Greiner Co Emil
Griebel Co
Industrial Instrs Inc
Marshall Instrs
National Appliance Co
Nurnberg Scientific
Schuco Scientific
Scientific Glass App
Torsion Balance Co
W & W Mfg Co
Will Corporation



CIRCLE 221 ON READER-SERVICE CARD

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Brabender Corp
Brabender Instr C W
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Central Scientific
ComputDyne Corp
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Curtiss Wright
Daystrom/Weston
Dietert Co
Electric Eye Equip
Gas Drying Inc
Grain Lab Equip
Greiner Co Emil
Hill & Co E Vernon
Industrial Instrs Inc
Industrial Nucleonics
Instruments Inc
Labline Inc
Mine Safety Appliances
Moisture Register Co
Ohaus Scale Corp
Pfaltz & Bauer
Princeton Div
Robbins Aviation Inc
Schlumberger Corp
Stewart M C
Testing Machines Inc
Tracerlab Inc
Weighing & Controls

MUD ANALYSIS INSTRUMENTS
Automation Products
Brabender Instr C W
Consol Electrodynamics
Davis Instruments
Greiner Co Emil
Industrial Instrs Inc
Loe Engrg Co
Mine Safety Appliances

NATURAL SCIENCE SUPPLIES
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Nurnberg Scientific
Schuco Scientific

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Coleman Instruments Inc
Epic Inc
Ercona Corp
Fisher Scientific
Golden Instruments
Greiner Co Emil
Phoenix Precision Instr
Schuco Scientific

NEUTRON SOURCES
Applied Radiation Corp
High Voltage Engrg
Klinger Scientific
Nucleonic Corp of Amer
Radiation Applications
Texas Nuclear Corp
Tracerlab Inc
US Radium Corp

ODOR DETECTING INSTRUMENTS
Jarrell Ash Co

OIL CENTRIFUGE TUBE
Corning Glass
Greiner Co Emil
Martin & Co H S
National Appliance Co
Nurnberg Scientific
Phillips-Drucker Inc

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Bausch & Lomb
Syracuse Electronics

OPTICAL BENCHES
Alfa-American Corp
Askania-Werke
Central Scientific
Davidson Optronics
Epic Inc
Gaertner Scientific
Gordon Enterprises
Jarrell Ash Co
Keuffel & Esser
Klinger Scientific
Kollsman Instr Corp
Mann Co David W
O K Machine & Tool
Palos Optical Co
Penn Optical & Instr
Phoenix Precision Instr
Schuco Scientific
Unertl Optical Co
Welch Mfg Co W M
Zoomar Inc

OPTICAL TESTING INSTRUMENTS (see also Lens Testers-Cat. 6)
Acme Industrial Co
Alfa-American Corp
American Optical Co
Askania Werke
Bausch & Lomb
Berger & Sons C L
Buhl Optical Co
Coast Instrument
Davidson Optronics
Edmund Scientific
Engis Equipment
Ercona Corp
Gaertner Scientific
Gbers Amer Optical
Gordon Enterprises
Image Instruments
Keuffel & Esser
Kollsman Instr Corp
Lerma Engrg Corp
Mast Development
Palos Optical Co
Penn Optical & Instr
Phoenix Precision Instr
Stocker & Yale
Tinsley Labs
Unertl Optical Co
Zoomar Inc

OPTIMETERS
Ercona Corp
Gordon Enterprises
Opto Metric Tools

Orth-Tolidin Testing Outfit
Lamotte Chemical Prods

OVENS, Calibration, Testing and Aging
AC Lab Equipment
Airtronics Inc
Associated Testing Labs
Blue M Electric
Electric Hotpack
Emerson Apparatus
Greiner Co Emil
Hevi-Duty Electric
Huppert Co K H
Labline Inc
Leeds & Northrup
Missimers Inc
Modern Lab Equipment
Nurnberg Scientific
Precision Scientific Co
Schuco Scientific
Scott Testers Inc
Statham Instruments
Temperature Engrg Corp
Tenney Engineering
Testing Machines Inc
Universal Dynamics Corp

Ovens, Laboratory
AC-Lab Equipment
Airtronics Inc
American Gas Furnace
Auto-Control Labs
Blue M Electric
Central Scientific
Dietert Co
Drying Systems Co
Electric Hotpack
Fisher Scientific
Greiner Co Emil
Hayes Inc C I
Hevi-Duty Electric
High Vacuum Equip
Huppert Co K H
International Radiant
L and L Mfg Co
Labline Inc
Laboratory Equip Corp
Leeds & Northrup
Modern Lab Equipment
National Appliance Co
Nurnberg Scientific
Pacific Transducer Corp
Primex Inc
Precision Scientific Co
Schuco Scientific
Selas Corp of America
Sellitest Inc
Statham Instruments
Telectro Industries
Temperature Engrg Corp
Tenney Engineering
Testing Machines Inc
Thermo Electric Mfg
Welch Mfg Co W M
Williams Apparatus

PAINT TEST INSTRUMENTS, including Hiding Power, Film Thickness, etc.
Alfa American Corp
Biddle Co James G
Brabender Instr C W
Burrell Corp
Fisher Scientific
Greiner Co Emil
Hallikainen Instrs
Hayes Inc C I
Koehler Instr Co
Nurnberg Scientific
Sunshine Scientific
Unit Process Assemblies

PARAFIN and/or PITCH TESTERS
Koehler Instr Co
National Appliance Co
Temperature Engrg Corp

PARTICLE INSTRUMENTS, including Particle Size
Bush Associates G F
Coulter Indus Sales
Dietert Co
Fisher Scientific
General Mills Inc
Image Instruments
Instrument Corp of Amer
Instr Development Co
La Pine and Co
Mine Safety Appliances
Monitron Co
Nuclear-Chicago
Palo Lab Supplies
Palos Optical Co
Phoenix Precision Instr
Precision Scientific Co
Sanborn Company
Unitron Instrument

PERMEAMETERS, Porosity
Greiner Co Emil
Gurley W & L E
Ruska Instrument

PETROLEUM TESTING INSTRUMENTS
Apex Scientific Co
Automation Products
Brabender Instr C W
Burrell Corp
Cambridge Instrument
Central Scientific
Coleman Instrument Co
Consol Electrodynamics
Consolidated Systems
Dietert Co
Electric Hotpack
Engis Equipment
Fisher Scientific
Greiner Co Emil
Griesel Co
Hanmer Electronics
Instruments Inc
Koehler Instr Co
Labline Inc
Laboratory Equip Corp
Loe Engrg Co
Nurnberg Scientific
Parr Instrument Co
Phoenix Precision Instr
Precision Scientific Co
Ruska Instrument Corp
Scientific Instrument
Sellitest Inc
Testing Machines Inc
Ultra-Violet Prods
United Engineers Inc
W & W Mfg Co

PHOSPHATE TESTING EQUIPMENT
Lamotte Chemical Prods
Milton Roy Co
Nurnberg Scientific
Taylor & Co W A

PHOTOMETERS, Miscellaneous (including Bar, Candle, Flame, Flicker, Neutral Wedge, Sphere, etc. (see also Illumination Instruments-Cat. 3)
Advanced Instruments
Alfa American Corp
Baird-Atomic Inc
Biddle Co James G
Coleman Instruments Inc
Eldorado Electronics
Epic Inc
Ercona Corp

moisture
determination
balance
by
OHAUS
A combination drying unit and Precision Balance, this instrument can be used for solids or liquids, and shows the percentage of moisture directly to plus or minus 0.1%.
Variable control of 650 watt unbreakable heating element and adjustable heater to sample distance make possible a wide range of drying temperatures.
The timer, with one minute settings up to 60 minutes, shuts off automatically upon completion of the drying cycle.
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CIRCLE 222 ON READER-SERVICE CARD

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Golden Instruments
Greiner Co Emil
Instru Development Labs
Instrumentation Assoc
Leeds & Northrup
Monitron Co
Natl Instrument Labs
Nurnberg Scientific
Pfaltz & Bauer
Phoenix Precision Instr
Process & Instruments
Waters Associates
Welch Mfg Co W M
Zenith Optical Lab
Zoomar Inc

PHOTOMETERS, Reflection
Automation Dynamics
Eldorado Electronics
Engis Equipment
Epic Inc
Ercona Corp
Golden Instruments
Instr Development Labs
Macbeth Corp
Nurnberg Scientific
Pfaltz & Bauer
Phoenix Precision Instr
Welch Mfg Co W M
Zeiss Inc Carl
Zoomar Inc

PHOTOMETERS, Ultraviolet
Analytic Systems
Eldorado Electronics
Engis Equipment
Erwood Inc
Instrumentation Assoc
Jarrell Ash Co
Kruger Instrs Harold
Macbeth Corp
Nurnberg Scientific
Phoenix Precision Instr
Pfaltz & Bauer
Process & Instruments
Spectra Electronics
Welch Mfg Co W M

PLASTIMETERS
Brabender Corp
Brabender Instr C W

POLARIMETERS
Engis Equipment
Epic Inc
Ercona Corp
Gaertner Scientific
Goerz Amer Optical
Greiner Co Emil
Nurnberg Scientific
Phoenix Precision Instr
Schoen Scientific
Sunshine Scientific
Zeiss Inc Carl

POLARISCOPES
American Optical Co
Applied Instruments Inc
Bausch & Lomb
Budd Co Inst Div
Edmund Scientific
Engis Equipment
Gaertner Scientific
General Radio
Greiner Co Emil
Nurnberg Scientific
Pacific Transducer Corp
Pfaltz & Bauer
Schoen Scientific
Sunshine Scientific
Polarizers, Light
Applied Instruments Inc
Bausch & Lomb
Gaertner Scientific
Greiner Co Emil
Nurnberg Scientific
Tiffen Optical

POLARIZING PLATES
Applied Instruments Inc
Bausch & Lomb
Gaertner Scientific
Tiffen Optical

POLYGRAPHS
Associated Research
Microchemical Specialties
Offner Electronics Inc
Lafayette Instr

POROSITY TESTERS
Gurley W & L E
Greiner Co Emil
Koehler Instr Co
Testing Machines Inc

PSYCHOLOGY LABORATORY APPARATUS (see also Polygraphs)
Associated Research
Biophysical Electronics
Electro-Medical Lab
Lafayette Instr
Microchemical Specialties
Pacific Technical Co
Phippa & Bird

PUBLIC HEALTH TESTING EQUIPMENT
Burrell Corp
Electric Hotpack
Electronics International
Ercona Corp
Gelman Instrument
Hill & Co E Vernon
Instr Development Co
Labline Inc
Mast Development
Mine Safety Appliances
National Appliance Co
National Spectrographic
Nuclear-Chicago
Nuclear Corp of Amer
Nuclear Measurements
Nucleonic Corp of Amer
Stapley Company
Temperature Engrg Corp
Ultra-Violet Prods
W & W Mfg Co

PUMPS, Glass Cylinder and Piston Type
Baltimore Biological La
Corning Glass
Gelman Instrument
Greiner Co Emil
Kruger Instrs Harold
Lapp Insulator
Porter Inc Geo K
Precision Glass Products
W & W Mfg Co
Welch Mfg Co W M

PUMPS, Laboratory High Pressure (25000 psig)
Autoclave Engineers
Coleman Instrument Co
Davies Brothers
Great Lakes Mfg
Greiner Co Emil
Henderer's Sons
Lapp Insulator
Pressure Products Indust
Ruska Instrument Corp
Welch Mfg Co W M

PYCNOMETERS
Coleman Instrument Co
Fisher Scientific
Greiner Co Emil
Houston Instrument
Koehler Instr Co
Labglass Inc
Martin & Co H S
Microchemical Specialties
Nurnberg Scientific

RADIATION PICKUPS, including Bolometers, Thermopiles, etc.
Baird-Atomic Inc
Barnes Engineering
Eppley Laboratory
Infrared Industries
Leeds & Northrup
Mason Instr Co
Nuclear-Chicago
Radiation Electronics
Research Council Inc
Ruge Associates
Shaw Instr Corp
Stewart M C

RADIOACTIVITY DETECTING AND MEASURING EQUIPMENT, including Dosimeters, Radioactive Prospecting, Scintillation Counters (see also Ionization Chambers)
American Tradair
Applied Physics Corp
Automation Dynamics
Baird-Atomic Inc
Bausch & Lomb
Bendix Cincinnati Div
Beva Laboratory
BJ Electronics
Borg-Warner Controls
Budd Co Inst Div
Cambridge Instrument
Computer Measurements
Controls for Radiation
Corning Glass
Curtiss Wright
Designs for Tomorrow
Eastman Kodak
Eldorado Electronics
Electronics International
Forro Scientific
Gelman Instrument
GE Apparatus Sales Div
GE X-Ray Dept
Greiner Co Emil
Hamner Electronics
Heath Co
Henson Co Fred C
Instrumentation Assoc
Instruments Inc
Klinger Scientific
Land-Air Inc
Landwerk Electrometer
Instruments Inc
Magnetic Instr Co
Med-Tronics Mfg Co
Nati Radiac
National Standard Elx
Nuclear-Chicago
Nuclear Corp of Amer
Nuclear Dev Lab
Nuclear Elx Corp
Nuclear Materials & Equip
Nuclear Measurements
Nuclear Ohio
Nucleonic Corp of Amer
Pacific Transducer Corp
Packard Instrument Co
Picker X-Ray Corp
Radiation Applications
Radiation Counter Labs
Radiation Instr Dev Lab
Rizzo Nucleonics
Southwestern Indus Elx
Staplex Company
Tech Measurement Corp
Telechrome Mfg Corp
Tracerlab Inc
United Engineers Inc
WE Electronic Tube
Wood N Counter Lab

REFLECTION METERS, including Reflectometers
Beckman Sci & Proc Div
Epic Inc
Golden Instruments
Pfaltz & Bauer
Phoenix Precision Instr
Schuco Scientific
Testing Machines Inc
Tri-Tronics Co
United Shoe Machinery
Welch Mfg Co W M

REFLECTORS, including Aspherical, Concave, First Surface, Parabolic and Spherical
Ainsilie Corp
Alfa-American Corp
Applied Instruments Inc
Bausch & Lomb
Buhl Optical Co
Collins Radio
Davidson Optronics
Diamond Antenna
K & W Optical
Engis Equipment
Fecker Inc
Herron Optical
Librascope Div
Optron Lab
Pacific Universal Prods
Palos Optical Co
Pancro Mirrors Inc
Simpson Optical
Strong Electronic Corp
Tiffen Optical
Uberti Optical Co
United Shoe Machinery
Wollensak Optical
Zenith Optical Lab

REFLECTORS, Heat Resisting
Applied Instruments Inc
Bausch & Lomb
Buhl Optical Co
Corning Glass
Herron Optical
Pacific Universal Prods
Palos Optical Co
Pancro Mirrors Inc
Tiffen Optical
Zenith Optical Lab

REFLECTORS, Special Alloy
Applied Instruments Inc
Bausch & Lomb
Palos Optical Co
Zenith Optical Lab

REFRACTOMETERS
Alfa American Corp
American Optical Co
Barnes Engineering
Bausch & Lomb
Bushnell & Co D P
Consol Electrodynamics
Davis Instruments
Dayatron/Weston
Engis Equipment
Epic Inc
Ercona Corp
Fisher Scientific
Gaertner Scientific
Goerz Amer Optical
Greenbrier Instrs
Jarrell Ash Co
Kerneo Instruments Co
Mine Safety Appliances
Natl Instrument Co
Nurnberg Scientific
Pfaltz & Bauer
Phoenix Precision Instr
Process & Instruments
Sunshine Scientific
Waters Associates
Zeiss Inc Carl

RHEOSTATS, Laboratory and Meter Testing
Allen-Bradley
American Optical Co
Biddle Co James G
Central Scientific
General Radio
Greiner Co Emil
Kintronic Div
Leeds & Northrup
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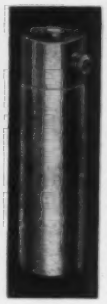

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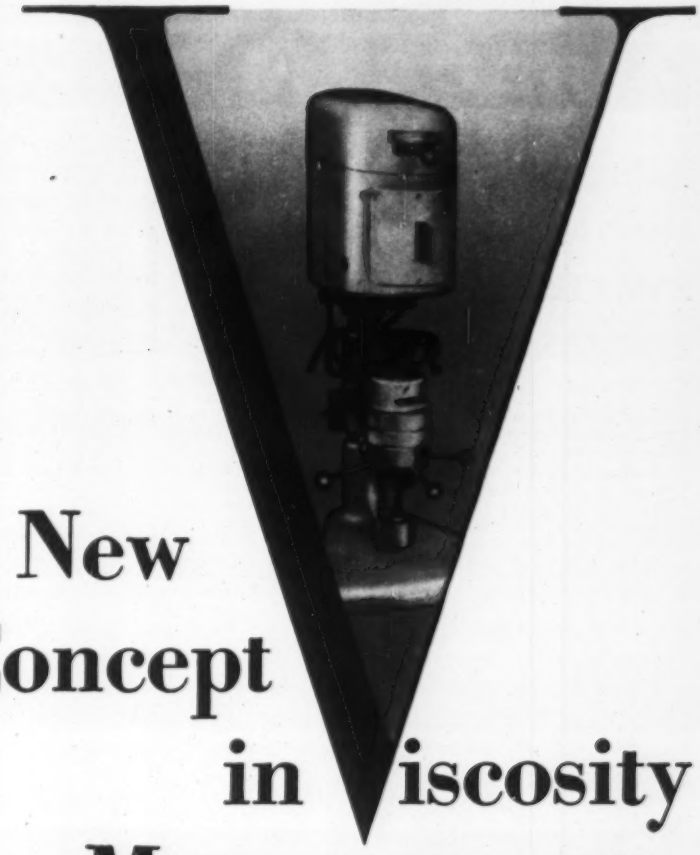

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Bendix Eclipse-Pioneer
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Kearfott Div
Niagara Frontier Div
Power-Tronic Systems
Sperry Gyroscope
Sperry Piedmont
Sterling Precision

COMPASSES, Magnetic
American Thermo-Ware
Belock Instrument
Berger & Sons C L
Garlynn Engrg Co
Gurley W & L E
Hand & Sons Co John E
Kearfott Div
Sterling Precision
U S Gauge Div
Waltham Precision Instr
Warren-Knight Co

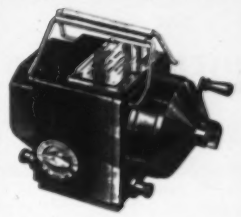
COMPASSES, Marine
Arma Division
Belock Instrument
Garlynn Engrg Co
Hand & Sons Co John E
Kearfott Div
Power-Tronic Systems
Sperry Gyroscope
Sperry Piedmont
Sterling Precision

COMPASSES, Radio
Bendix Eclipse-Pioneer
Kearfott Div
Sperry Gyroscope
Sterling Precision

DEEP SEA INSTRUMENTS
Alden Electronic
Atlantic Research
Colvin Labs
Diamond Power Specialty
Dittmore-Freimuth
Electronics International
Felsenthal & Sons
GPE Controls
Hand & Sons Co John E
Hickok Electrical Instr
Industrial Instrs Inc
Phileo Corp
Pickard & Burns
Sperry Piedmont
Wallace & Tiernan
Wiancko Engrg Co

DEPTH INDICATORS, Navigational
Alden Electronic
Borg-Warner Controls
Bowmar Instrument
Dittmore-Freimuth
Glasseo Instr
GPE Controls
Hand & Sons Co John E
Hansen Co Wm
Heath Co
Kearfott Div
Librascope Div
Moeller Instr Co
Phileo Corp

MEGGER



ELECTRICAL INSULATION RESISTANCE TESTERS

The performance and endurance records of Megger Instruments are difficult, if not impossible, to match in any type of portable testing device. Sizes range from Midget Megger tool-kit instruments with ratings up to 100 megohms, 500 volts d.c. to Heavy Duty Megger Insulation Testers with special ranges to 200,000 megohms, 10,000 volts d.c. The Meg Type of Megger Insulation Testers (illustrated) in ranges up to 2000 megohms, 1000 volts d.c. are available in hand-crank, rectifier-operated or dual-operated models.

WRITE FOR INFORMATION ON:
Megger® Insulation Testers . . . File 21-T
Megger® Earth Resistance Testers . . . Bulletin 25-T
Ducter® Low Resistance Ohmmeters . . . Bulletin 24-25-T

01015

BIDDLE INSTRUMENTS

JAMES G. BIDDLE CO.
Electrical and Speed Measuring Instruments
1316 ARCH STREET, PHILADELPHIA 7, PA.

CIRCLE 227 ON READER-SERVICE CARD

Raytheon/Comm Apparatus
Servonic Instruments
Sperry Piedmont
Times Facsimile
Uehling Instrument
Ultrasonic Industries
Winston Electronics

DIRECTION INDICATORS, Radio-actuated (see also Aircraft Instruments, also Navigation Aids)
Baird-Atomic Inc
Bendix Eclipse-Pioneer
Bowmar Instrument
Control Electronics
Cubic Corp
Garlynn Engrg Co
General Devices
Giannini Controls Corp
Gulton Industries
Hastings-Raydist
Heath Co
Kearfott Div
Land-Air Inc
Librascope Div
Motorola Military Elx
Oster Mfg John
Phileo Corp
Power-Tronic Systems
Sperry Gyroscope
Sperry Piedmont
Sylvania Electronic
United Shoe Machinery

DRIFT INDICATORS
Bowmar Instrument
Giannini Controls Corp
Gurley W & L E
Muirhead Instrs Inc
Oster Mfg John
Sterling Precision

EARTH CURRENT INDICATORS
GE Apparatus Sales Div
Militrac Instr Div
M-H Boston Div

EARTH RESISTANCE INDICATORS
Associated Research
Biddle Co James G
Texas Instruments Inc
Winslow Company Inc

FIRE CONTROL INSTRUMENTS, Military and Naval Ordnance
Abrams Instrument
Alfa-American Corp
American Bosch Arma
Arma Division
Autonetics
Barnes Engineering
Bausch & Lomb
Belock Instrument
Bendix Montrose Div
Budd Lewyt
Buhl Optical Co
Bowmar Instrument
Daystrom/Mil Elx
Designers for Industry
Edmund Scientific
Electric Tachometer
Electronic Controls Inc
Engis Equipment
Federal Pacific
Felsenthal & Sons
Ford Instr
Gaertner Scientific
Garlynn Engrg Co
General Controls
General Mills Inc
Gordon Enterprises
Greenleaf Mfg Div
Gurley W & L E
Haydon Co A W
Hoffman Laboratories Div
Hughes Products
Industrial Control Co
Kearfott Div
Keuffel & Esser
Land-Air Inc
Leemath Inc
Librascope Div
Mast Development
Maxson Corp W L
Milgo Electronic
Monitor Systems Inc
Monitron Co
Oster Mfg John
Pegasus Labs
Phileo Corp
Power-Tronic Systems
RCA Systems Support
Reeves Instr Corp
Specialties Inc
Sperry Gyroscope
Sperry Piedmont
Stavfel Div
Sterling Precision
Strand Engrg Co
Tele-Dynamics Div
Uneti Optical Co
United Electric Controls
Wiancko Engrg Co
Wollensak Optical
Zenith Optical Lab

FLIGHT TEST INSTRUMENTS
Acromag Inc
Aero Research Instr
Airborne Instr Lab
Applied Electronics
B & F Instruments
Bendix Pioneer-Central
Consol Electrodynamics
Consolidated Systems
Convair Instruments
Designers for Industry
Electro-Logic Corp
Electronic Controls Inc
Electronics International
Feedback Controls Inc
Felsenthal & Sons
General Devices
GE Apparatus Sales Div
Gordon Enterprises
Hickok Electrical Instr
Humphrey Inc
Industrial Control Co
Integrated Dynamics Div
Kearfott Div
Leonard Inc Wallace O
Micro Gee Products
Midwestern Instrs
M-H Boston Div
Nanmac Corp
North Atlantic Indus
Phileo Corp
Physical Sciences Corp
Rosemount Engrg Co
Scanivalve Co
Servonic Instruments
Specialties Inc
Statham Instruments
Summers Gyroscope
Telecomputing Corp
Tele-Dynamics Div
Theta Instrument
United Electric Controls
Wiancko Engrg Co

GYRO STABILIZERS
Allen Business Machines
Arma Division
Bendix Eclipse-Pioneer
Control Technology
Gordon Enterprises
Humphrey Inc
Kearfott Div
M-H Aeronautical Div
M-H Boston Div
Muirhead Instrs Inc
Phileo Corp
Power-Tronic Systems
Sperry Gyroscope
Sperry Piedmont
Sterling Precision
U S Time Corp

GYROS AND GYROSCOPES, Vertical and Directional Rate
Allen Business Machines
American Bosch Arma
Autonetics
Belock Instrument
Bendix Eclipse-Pioneer
Bulova Research
Control Data Corp
Fairchild Controls
Ford Instr
GE Apparatus Sales Div
GE Light Mil Elx Dept
Giannini Controls Corp
Globe Industries
Greenleaf Mfg Div

THE GEOTECHNICAL CORPORATION
GEOTECH
DALLAS TEXAS

DESIGNERS and MANUFACTURERS

- Telemetering components and systems
- Galvanometers
- Seismometers
- Phototube amplifiers
- Special filters
- Recorders-Oscillographs

(Film, photographic paper, heat sensitive paper)

Complete Seismological Station Installations

THE GEOTECHNICAL CORPORATION

3401 SHILOH ROAD
GARLAND, TEXAS

Mailing Address
P.O. Box 28277
Dallas 28, Texas

Phone
BRoadway 8-8102

CIRCLE 228 ON READER-SERVICE CARD

Gyrex Corp
Hoffman Laboratories Div
Humphrey Inc
Integrated Dynamics Div
Kearfott Div
Maxson Corp W L
M-H Aeronautical Div
M-H Boston Div
Muirhead Instrs Inc
Niagara Frontier Div
Norden Division
Philco Corp
Reeves Instr Corp
Servo Systems Co
Sperry Gyroscope
Sperry Phoenix Co
Sperry Piedmont
Summers Gyroscope
U S Time Corp
Waltham Precision Instr

HELIOSTATS

Bendix Pioneer-Central
Gaertner Scientific
Palos Optical Co

HOOK GAGES

Belfort Instrument
Dwyer Mfg F W
Garlynn Engrg Co
Gurley W & L E

HYDROLOGIC INSTRUMENTS, including Rain Gages

Advanced Instr Corp
Atkins Technical Inc
Belfort Instrument
Bendix-Friez Instr
Gurley W & L E
Steward M C

INCLINOMETER TUBES

Bendix Pioneer-Central
Engis Equipment
Instrol Inc
Porter Inc Geo K
Precision Thermometer
Warren-Knight Co

MAP MAKING PROJECTORS

Bausch & Lomb
Belfort Instrument
Ercona Corp
Gordon Enterprises
Librascope Div
Mast Development

MAP MEASURES

American Thermo-Ware
Felsenthal & Sons
Gordon Enterprises
Hamilton Watch
Photoplating Co
Warren-Knight Co

MARINE INSTRUMENTS, including Steering Systems, Logs, etc. (see also Barometers—Cat.7, also Compasses)

Advanced Instr Corp
Belock Instrument
Electric Tachometer
Electronic Controls Inc
Felsenthal & Sons
GPE Controls
Hand & Sons Co John E
Magnetic Instr Co
Moeller Instr
Pegasus Labs
Pickard & Burns
Sperry Gyroscope
Sperry Piedmont
Sterling Precision
Warren-Knight Co
Westinghouse Air Brake
Wheeler Mfg Co C H

METEROLOGICAL INSTRUMENTS, including Wind Velocity, Wind direction, etc.

Advanced Instr Corp
Airtronics Inc
Alden Electronic
Askania-Werke
Atkins Technical Inc
Automation Dynamics
Barnes Engineering
Beckman & Whitley
Belfort Instrument
Bendix-Friez Instr
Cooper Development
Daystrom/Mil Elx
Di/An Controls
Dittmore-Freimuth
Dwyer Mfg F W
Dynamics Research
Epic Inc
Exactel Instrument
Felsenthal & Sons
General Devices
Gurley W & L E
Hastings-Raydist
Hill & Co E Vernon
Illinois Testing Labs
Instr Development Co
Spectra Electronics
Stewart M C
Tapco Group
Tele-Dynamics Div
Texas Instruments Inc
United Electrodynamics
Victory Engineering
Wallace & Tiernan
Weksler Instruments
Westronics Inc

NAVIGATION AIDS, Aircraft, including Loran, Ranges, Sheran, etc. (see also Compasses, also Radar, also Radiosondes)

Airesearch Mfg Co
Alford Mfg
Automation Dynamics
Baird-Atomic Inc
Bendix Eclipse-Pioneer
Collins Radio
Daystrom/Mil Elx
Designers for Industry
Federal Pacific
Felsenthal & Sons
GPL Division
General Mills Inc
General Railway Signal
Hand & Sons Co John E
Hastings-Raydist
Hoffman Laboratories Div
Kearfott Div
Kemlite Labs
Laboratory for Electronics
Land-Air Inc
Maxson Corp W L
Motorola C and E
Motorola Military Elx
Norden Division
Philco Corp
Pickard & Burns
RCA Defence Electronic
Raytheon/Equipt Div
Raytheon/Missile Sys
Reflectone Electronics
Seiscor Div
Seismograph Service
Sperry Gyroscope
United Shoe Machinery
Virginia Electronics

NAVIGATION AIDS, Marine, including Loran, Sheran, etc. (see also Compasses, also Radar, also Radiosondes)

Airborne Instr Lab
Amglo Corp
Cubic Corp
Daystrom/Mil Elx
Designers for Industry
Felsenthal & Sons
General Railway Signal
Hand & Sons Co John E
Harris Transducer
Hastings-Raydist
Heath Co
Kemlite Labs
Land-Air Inc
Motorola C and E
Motorola Military Elx
Philco Corp
Pickard & Burns
Polarad Electronics Corp
Power-Tronic Systems
RCA Defence Electronic
Raytheon Comm Apparatus
Seiscor Div
Sperry Gyroscope
Sperry Piedmont
Stewart-Warner Corp
United Shoe Machinery
Virginia Electronics
Wallace & Tiernan
Waterman Products

NAVIGATIONAL INSTRUMENTS, including Octants, Sextants (see also Compasses)

Baird-Atomic Inc
Belock Instrument
Collins Radio
Felsenthal & Sons
Gerber Scientific Inst
Hand & Sons Co John E
Kollsman Instr Corp
Librascope Div
Sperry Gyroscope
Sperry Phoenix Co
Warren-Knight Co

OCEANOGRAPHIC INSTRUMENTS AND EQUIPMENT

Advanced Instr Corp
Airpax Electronics
Alden Electronic
Askania-Werke
Atlantic Research
Barnes Engineering
Concord Control Inc
Diamond Power Specialty
Edgerton Germeshausen
Geotechnical Corp
Harris Transducer
Hastings-Raydist
Industrial Instrs Inc
Sperry Piedmont
Stavid Div
W & W Mfg Co

ORDNANCE INSTRUMENTS, including Ballistics

Alfa-American Corp
Arma Division
Askania-Werke
Avco Corp
Berger & Sons C L
Designers for Industry
Electro-Mechanical Res
Fred Instr
Garlynn Engrg Co
General Mills Inc
Gordon Enterprises
Henson Co Fred C
Integrated Dynamics Div
Interelectronics
Keuffel & Esser
Nanmac Corp
Palos Optical Co
Penn Optical & Instr
Philco Corp
Sperry Gyroscope
Unertl Optical Co
United Electric Controls
Waltham Precision Instr
Wiancko Engrg Co
Wollensak Optical

PELORUSES

Garlynn Engrg Co
Hand & Sons Co John E
Zenith Optical Lab

PERISCOPES, Military and Naval

Baird-Atomic Inc
Bausch & Lomb
Berger & Sons C L
Buhl Optical Co
Curtis Labs
Edmund Scientific
Gordon Enterprises
Keuffel & Esser
Kollsman Instr Corp
Lenox Instrument Co
Lerma Engrg Corp
Librascope Div
Penn Optical & Instr
Sperry Gyroscope
Sperry Piedmont
Unertl Optical Co
Wollensak Optical
Zenith Optical Lab
Zoomar Inc

PHOTOGRAMMETRIC INSTRUMENTS

Abrams Instrument
Bausch & Lomb
Belfort Instrument
CBS Laboratories
Ercona Corp
Fairchild Camera & Instr
Felsenthal & Sons
Garlynn Engrg Co
Goerz Amer Optical
Gordon Enterprises
Henson Co Fred C
Kollsman Instr Corp
Lafayette Instr
Librascope Div
Mann Co David W
Mast Development
Paraham Inc
Photoplating Co
Vanguard Instrument

RADAR

Airborne Instr Lab
American Trackair
Andersen Labs
Autonetics
Brooks & Perkins
Budd Lewyt
Curtiss-Wright
Daystrom/Mil Elx
Designers for Industry
Diamond Antenna
GPL Division
General Mills Inc
Gorham Mfg Co
Hoffman Laboratories Div
Intercontinental Elx
Lavoie Labs
Maxson Corp W L
Motorola Military Elx
Packard Bell
Palos Optical Co
Philco Corp
Pickard & Burns
RCA Defence Electronic
R S Electronics Corp
Raytheon Comm Apparatus
Reeves Instr Corp
Reisner Mfg Co W H
Sperry Gyroscope
Sperry Piedmont
Stavid Div
Strand Engrg Co
Sylvania Electronic
Trak Electronics
United Shoe Machinery

RADIO BEACON SYNCHRONIZING CONTROLLERS

Airborne Instr Lab
Control Electronics
Cooper Development
Designers for Industry
General Communication
GE Light Mil Elx Dept
Land-Air Inc
Maxson Corp W L
United Control Systems

RADIOSONDES (see also Navigation Aids)

Automation Dynamics
Bendix-Friez Instr
Cooper Development
Dittmore-Freimuth
General Mills Inc
Motorola Military Elx
R S Electronics Corp
Tapco Group
Telechrome Mfg Corp
Tele-Dynamics Div
United Shoe Machinery

RANGE FINDING INSTRUMENTS (see also Ordnance Instruments)

Askania-Werke
Bausch & Lomb
Berger & Sons C L
Bowmar Instrument
Buhl Optical Co
Cubic Corp
Daystrom/Mil Elx
Designers for Industry
Felsenthal & Sons
Gordon Enterprises
Keuffel & Esser
Librascope Div
Motorola Military Elx
Penn Optical & Instr
Philco Corp
Spectra Electronics
Sperry Gyroscope
Sperry Piedmont
United Shoe Machinery

SEISMOLOGICAL INSTRUMENTS, including Seismographs

Alden Electronic
Askania-Werke
Electrodynamic Instr
Geotechnical Corp
Seiscor Div
Seismograph Service
Servo-Tek Products
Southwestern Indus Elx
Sprengnether Instr
Texas Instruments Inc
United Electrodynamics

SIGHTS, Gun, Telescopic

Bausch & Lomb
Berger & Sons C L
Buhl Optical Co
Bushnell Co D P
Gordon Enterprises
Keuffel & Esser
Kollsman Instr Corp
Mast Development
Sperry Gyroscope
Unertl Optical Co
Wollensak Optical

SIMULATORS, FLIGHT including Flight Tables

Aircraft Armaments
Amer Meas & Control
Bendix Computer Div
Calif Technical Indus
Carmody Corp
Curtiss-Wright
Daystrom/Mil Elx
Link Div
Mast Development
Micro Gee Products
Motorola Military Elx
Pegasus Labs
Philco Corp
Pickard & Burns
Sylvania Electronic
Tapco Group

SOUNDING MACHINES AND LEADS

Hand & Sons Co John E
Moeller Instr Co
Philco Corp

SOUNDING TUBES

Hand & Sons Co John E
Moeller Instr

SUNSHINE INDICATORS and or Recorders

Beckman & Whitley
Bush Associates G F
Stewart M C
Virginia Electronics

TELEMETERS, Surveying and Military, Optical

Applied Electronics
Baird Atomic
Designers for Industry
Dorsett Electronics Labs
Dynatronics Inc
General Devices
Geotechnical Corp
Hallamore Electronics
Haydon Co A W
Keuffel & Esser
Kollsman Instr Corp
Lerma Engrg Corp
Motorola Military Elx
Mycalex Corp of Amer
Solid State Electronics
Technology Instr (Mass)
United Electrodynamics
Warren-Knight Co

TELESCOPES, Astronomical

American Thermo-Ware
Askania-Werke
Bushnell Co D P
Coast Instrument
Edmund Scientific
Engis Equipment
Ercona Corp
E & W Optical
Gordon Enterprises
Herron Optical
Keuffel & Esser
Optron Lab
Palos Optical Co
Penn Optical & Instr
Tinsley Labs
Unertl Optical Co
Unitron Instrument

TELESCOPES, Azimuth and/or Zenith

American Thermo-Ware
Askania-Werke
Bausch & Lomb
Berger & Sons C L
Bushnell & Co D P
Coast Instrument
E & W Optical
Edmund Scientific
Ercona Corp
Gordon Enterprises
Herron Optical
Keuffel & Esser
Kollsman Instr Corp
Penn Optical & Instr
Tinsley Labs
Unertl Optical Co
Wollensak Optical

TELESCOPES, Reflection and or Refracting

Askania-Werke
Bausch & Lomb
Bushnell & Co D P
Coast Instrument
Edmund Scientific
Engis Equipment
Ercona Corp
E & W Optical
Gordon Enterprises
Herron Optical
Keuffel & Esser
Lerma Engrg Corp
Optron Lab
Palos Optical Co
Penn Optical & Instr
Tinsley Labs
Unertl Optical Co
Unitron Instrument
Wollensak Optical
Zoomar Inc

THEODOLITES, Magnetic

Askania-Werke
Gordon Enterprises
Gurley W & L E
Keuffel & Esser
Librascope Div
Rooks Instrument Corp
Warren-Knight Co

THEODOLITES, Pilot Balloon

Askania-Werke
Engis Equipment
Ercona Corp
Gordon Enterprises
Gurley W & L E
Keuffel & Esser
Librascope Div

WIND TUNNEL INSTRUMENTS

Advanced Dynamics
Aero Research Instr
American Electronics Inc
Automatic Timing & Contls
Avco Corp
B and F Instruments
Baldwin-Lima-Hamilton
Beckman Systems Div
Boonshaft and Fuchs
Bytrex Corp
Chadwick-Helmuth
CompuDyne Corp
Conoflow
Consol Electro-Dynamics
Consolidated Systems
Curtiss-Wright IMI
Datex Cor
Dwyer Mfg F W
Dynametrics Corp
Electro Instruments
Electro-Logic Corp
Electro-Mechanical Res
Engis Equipment
E & W Optical
Exactel Instrument
Flow Corporation
Gaertner Scientific
General Controls
General Devices
GPE Controls
Hastings-Raydist
High Temperature Instrs
Hill & Co E Vernon
Illinois Testing Labs
Leeds & Northrup
Nanmac Corp
Palos Optical Co
Propulsion Dev Labs
Rosemount Engrg Co
Ruge Associates
Specialties Inc
Statham Instruments
Tapeswitch Corp
Telecomputing Corp
Tinsley Labs
Trimount Instrument Div
Unertl Optical Co
Universal Dynamics
Westberg Mfg Co
Westronics Inc
Wiancko Engrg Co

Physical Properties Test Equipment

1961 BUYERS' GUIDE

6

INSTRUMENTS AND EQUIPMENT FOR QUALITY CONTROL, AND PRODUCTION TESTING, GAGING, AND INSPECTION OF PRODUCT AND MATERIALS

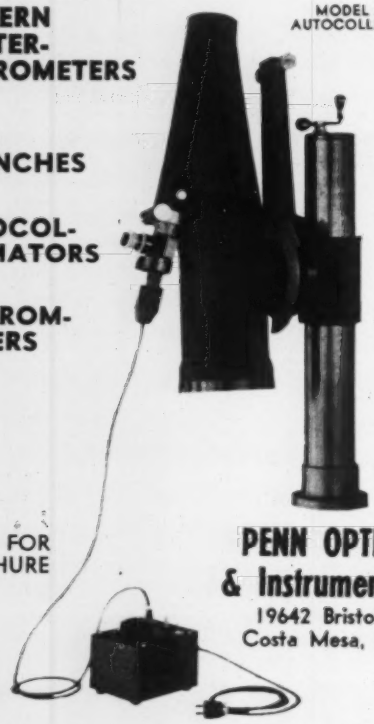
MODERN INTER-FEROMETERS

LENS BENCHES

AUTOCOL-LIMATORS

SPHEROM-ETERS

MODEL AC-4 AUTOCOLLIMATOR



WRITE FOR BROCHURE

PENN OPTICAL & Instrument Co.
19642 Bristol St.
Costa Mesa, Calif.

CIRCLE 229 ON READER-SERVICE CARD

ABRASION MACHINES AND TESTERS
Atlas Elec Devices
Custom Scientific Instrs
Engis Equipment
Hirschmann Co Carl
Scott Testers Inc
Sel-Rex Corp
Soiltest Inc
Taber Instrument
Testing Machines Inc
Tinius Olsen Testing
White Dental Mfg

ADHESION TESTERS, including Glue Testers
Amthor Testing
Custom Scientific Instrs
Dillon & Co W C
Electric Hotpack
Hunter Spring Co
Scott Testers Inc
Testing Machines Inc

ACCELERATORS, Linear and Rotational
Associated Testing Labs
Custom Scientific Instrs
Genisco Inc
Gyrex Corp
Hamilton Standard Div
High Voltage Engrg
Humphrey Inc
Land-Air Inc
Radiation Research Corp
Schaevitz Engineering

ASPHALT TESTING APPARATUS, including Penetration Needles
Arc Weld Mfg
Brabender Instr C W
Electric Hotpack
Greiner Co Emil
Hallikainen Instrs
Koehler Instr Co
Labline Inc
Marshall Instrs
National Appliance Co
Soiltest Inc
Temperature Engrg Corp
Tinius Olsen Testing

AUTO-COLLIMATORS
Alfa-American Corp
Barnes Engineering
Berger & Sons C L
Davidson Optronics
Engis Equipment
Ercona Corp
Gaertner Scientific
Garlynn Engrg Co
Gordon Enterprises
Keuffel & Esser
Kollsman Instr Corp

Announcing— *The Development of a Remarkable Autocollimator*

- **DIRECT READING** — ½ second of arc
- **SENSITIVITY** (Repeat Reading) — Better than ¼ second of arc

Human Engineering was a prime factor in the design of the Coordinate Autocollimator, D-638. Even after prolonged usage, physical strain and eye fatigue are practically non-existent due to these outstanding features:

COMPACTNESS — Being only 12½" in length permits the operator to make mirror adjustments while observing the alignment in the eyepiece.

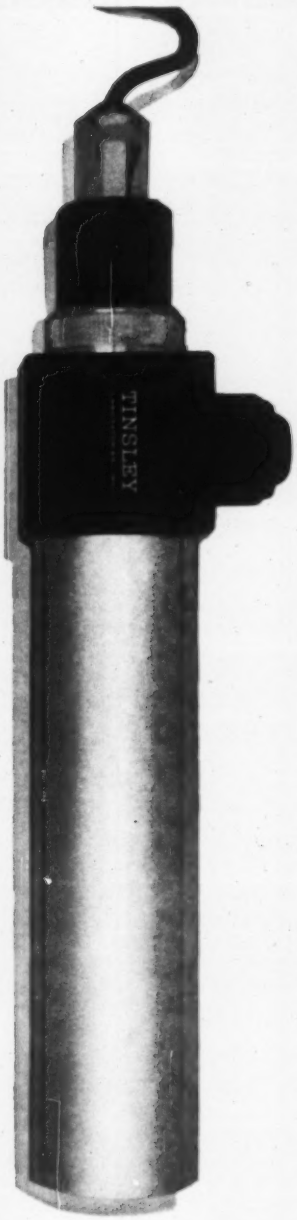
TILTED EYEPIECE — To give the operator the most comfort, the eyepiece has been tilted back from vertical. This relieves him of any awkwardness or strain that may affect the alignment setting.

SIMPLICITY OF ALIGNMENT — Alignment is simplified through a simple annular ring reticle that is illuminated on a dark field. The filar reticle, coupled to the micrometer drum, bisects the center of the illuminated reticle upon reaching alignment. This configuration was incorporated to speed alignment and lessen eye fatigue.

EASE OF READING — Both minutes and seconds are read from the drum adjacent to the eyepiece. This feature is an improvement on the method of obtaining minute readings through the eyepiece and second readings from an external drum.

DAVIDSON OPTRONICS, INC.
2223 RAMONA BOULEVARD, WEST COVINA, CALIF.

CIRCLE 230 ON READER-SERVICE CARD



Why pay for an expensive alignment telescope when a Tinsley Autocollimator may meet your requirements for hundreds of dollars less? The Tinsley Autocollimator is easily capable of reading precise angles to ¼ minute accuracy. 20 power. Interchangeable light source and eyepiece for viewing from end or side. Fits standard fixtures. Economical and dependably accurate. Write for price and information.

TINSLEY
LABORATORIES, INC.
2526 Grove Street · Berkeley 4, California

CIRCLE 231 ON READER-SERVICE CARD

Opto-Metric Tools
Palos Optical Co
Penn Optical & Instr
Scherr-Tumico
Tinsley Labs
Unertl Optical Co

BALANCING MACHINES, Dynamic

Annis Co R B
Bear Mfg Co
Coss Corp
Decker Corp
Electro-Autosizing
Gilmore Industries
Gisholt Machine
Hickok Electrical Instr
Hirschmann Co Carl
Micro-Balancing Inc
Raydyne Corp
Tinius Olsen Testing

BALANCING MACHINES, Static

Annis Co R B
Bear Mfg Co
Electro-Autosizing
Exact Weight Scale
Gelber & Sons
Gilmore Industries
Gisholt Machine
Hirschmann Co Carl
Raydyne Corp
Tinius Olsen Testing

BEARING TESTERS, including Bearing Testing Machines

Barden Corp
Brabender Instr C W
Electro-Autosizing
Hirschmann Co Carl
Koehler Instr Co
Magnaflux Corp
Pratt & Whitney
Sheffield Corp
Sunshine Scientific

BRAKE TESTING INSTRUMENTS

Bear Mfg Co
Epic Inc
Gilmore Industries
Greer Hydraulics Inc
Oxford Engrg Co

BURSTING TESTING MACHINES, including Mullen Testers

Amther Testing
Crosby-Ashton
Hirschmann Co Carl
Kahn & Co
Perkins & Son
Scott Testers Inc
Sunshine Scientific
Testing Machines Inc

CABLE TESTERS

Associated Research
Baldwin-Lima-Hamilton
Bracke-Beib X-Ray
Budd Co Inst Div
Concord Control Inc
Custom Scientific Instrs
Davenport Mfg
Daystrom/Weston
Dillon & Co W C
Dit-MCO Inc
Epic Inc
Erdco Engineering
General Radio
Haydon Co A W (Calif)
Hirschmann Co Carl
Industrial Instrs Inc
Instrument Laboratories
Lavoie Labs
Leemath Inc
Mefco Sales & Service
Metrol Inc
National Standard Elt
Optimized Devices
Peschel Electronics
Radio Frequency Labs
Ram Meter Inc
Raytheon/Comma Apparatus
Riehle Testing
Sunshine Scientific
Tinius Olsen Testing
WacLine Inc
Welch Eelctric
Wickes Engrg & Constr
Wiedemann Machine
Winslow Company Inc

CALIPER RULES

Alina Corp
Dixon Inc William
Greiner Co Emil
Henick Co L C
Scherr-Tumico
Starrett Co L S

CAMERA SHUTTER TESTERS

Gordon Enterprises
Mason Instr Co
Mast Development
Stocker & Yale
Sunshine Scientific

CEMENT MOLDS

Greiner Co Emil
Soiltest Inc

CEMENT NEEDLE APPARATUS

Custom Scientific Instrs
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Engis Equipment
Gordon Enterprises
Gurley W & L E
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Reniek Co L C
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Stocker & Yale

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Brabender Instr C W
Budd Co Inst Div
Central Scientific
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Custom Scientific Instrs
Electric Hotpack
Electro Products Labs
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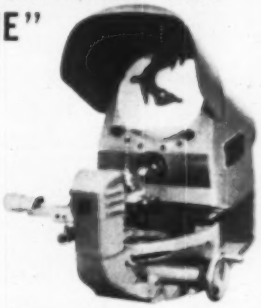

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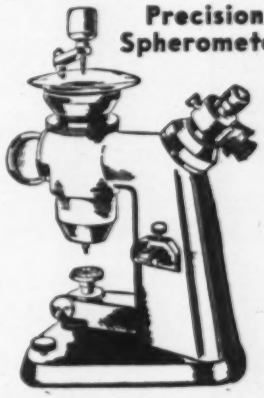

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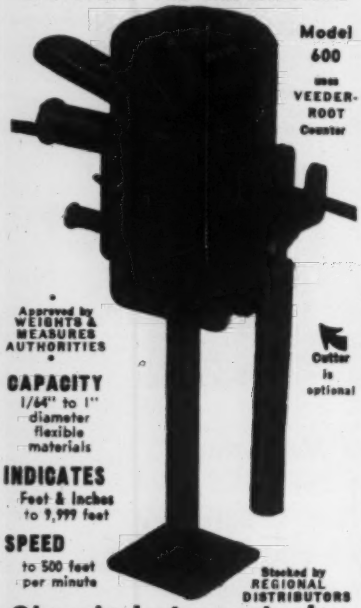

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Decker Corp
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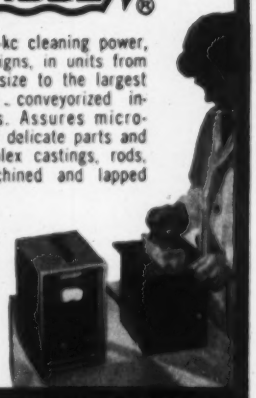

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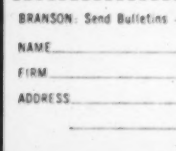

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RCA Industrial Elx
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Size Control Co
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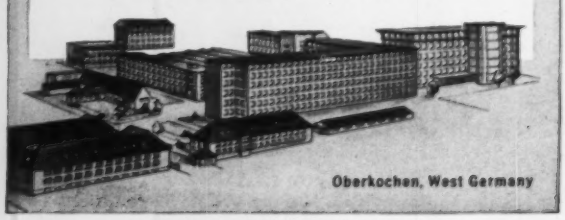

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Labline Inc
Mast Development
Pacific Transducer Corp
Radiation Electronics
Riehle Testing
Scott Testers Inc
Shore Instrument
Testing Machines Inc
Tinius Olsen Testing
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Taber Instrument
Techni-Rite Elix
Testing Machines Inc

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Dietert Co
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Soiltest Inc
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Hirschmann Co Carl
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STANDARDS, Surface Roughness and/or Finish
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Engis Equipment
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Warren-Knight Co

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Cox Instruments
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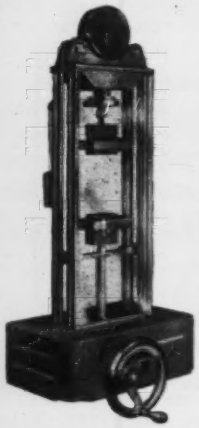

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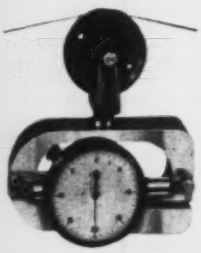

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Ariste Grid Lamp
Baird-Atomic
Beattie Coleman
Bushnell Co D P
Copymation Inc
Goerz Amer Optical
Gordon Enterprises
Hydel Inc
Ilex Optical Co
Lynn Robert M
Traid Corp
Tropel Inc
Welch Mfg Co W M
Wollensak Optical

PLUMB BOBS
Berger & Sons C L
Garlynn Engrg Co
Graf-Apsco Co
Gurley W & L E
Lufkin Rule Co
Starrett Co L S
Warren-Knight Co
Zoomar Inc

PROJECTORS, Film Slides Lantern Slide and Opaque Object
American Optical Co
Bausch & Lomb
Bebell & Bebell Color
Buhl Optical Co
Bushnell & Co D P
Camera Equipt Co
Dukane Corp
Eastman Kodak
Gordon Enterprises
Hulcher Co Inc C A
Lafayette Instr
Optics Mfg Corp
Palos Optical Co
Richardson Camera Co
Strong Electric Corp
Victor Animatograph
Wollensak Optical

PYRHELIOMETERS
Belfort Instrument
Eppley Laboratory

RADIATION ALARMS
Applied Physics Corp
Beva Laboratory
Borg-Warner Controls
Budd Co Inst Div
Cooper Development
Curtiss Wright
Designs for Tomorrow
Eberline Instrument
Electronics International
Gelman Instrument
General Nuclear Corp
Land-Air Inc
Nuclear Elx Corp
Nuclear Materials & Equip
Nuclear Measurements
Nucleonic Corp of Amer
Picker X-Ray Corp
Princeton Div
Radiomics Inc
Riggs Nucleonics
Southwestern Indus Elx
Telehrome Mfg Corp
Victoreen Instr Co
Westronics Inc

RADIOACTIVE ISOTOPES
Budd Co Inst Div
Curtiss Wright
Instruments Inc
Isotopes Specialties
Nuclear-Chicago
Nuclear Corp of Amer
Nuclear Materials & Equip
Nucleonic Corp of Amer
Picker X-Ray Corp
Princeton Div
Radiation Applications
Radiomics Inc
UB Radium Corp
Western Radiation Lab

RULER, Including Aluminum, Brass, Stainless Steel, and Steel
Cronsume Inc
Dixon Inc William
Etching Corp of Calif
Lufkin Rule Co
Millers Falls Co
Photoplating Co
Renick Co L C
Starrett Co L S

RULES, Precision Standard
Altensder & Sons
Gaertner Scientific
Gurley W & L E
Keuffel & Esser
Renick Co L C

SLIDERULE, Engineering Calculation
Berger & Sons C L
Graf-Apsco Co
Greiner Co Emil
Mann Co David W
Renick Co L C

STANDARD, Mass
Dynametrics Corp
Gilmore Industries
Gurley W & L E
Morehouse Machine

STANDARDS, Pressure
Buck Instrument
Consol Electrodynamics
Fischer & Porter Co
Gilmore Industries
Gulton Industries
Hass Instrument
Hill & Co E Vernon
Kurz Co R J
Natl Instrument Labs
Norwood Controls
Wallace & Tiernan
Wiancko Engrg Co

STANDARDS, Temperature
Gilmore Industries
Hill & Co E Vernon
Leeds & Northrup
Pyrometer Instr Co
Radiation Electronics
Ruge Associates
Telectro Industries

STANDARDS, Time
Accurate Instrument
Artronic Instr Co
Borg Equipment Div
Canadian Marconi
Computer Measurements
Delta Inc
Designers for Industry
Geotechnical Corp
Gyrex Corp
Hewlett-Packard
Parsons Co Ralph M
Pickard & Burns
Rahde & Schwarz
Telectro Industries
Times Facsimile

STANDARDS, Volume
Gurley W & L E

SURVEYING INSTRUMENTS, Including Aneroid Type
American Paulin
Askania-Werke
Berger & Sons C L
Cubic Corp
Engis Equipment
Erosna Corp
Garlynn Engrg Co
Gordon Enterprises
Graf-Apsco Co
Gurley W & L E
Hastings-Raydist
Lynn Robert M
Starrett Co L S
Victoreen Instr Co
Wallace & Tiernan
Warren-Knight Co

SURVEYING INSTRUMENTS, Underground, for wells or bore holes (see also Geophysical Instruments-Cat. 7)
Berger & Sons C L
Buff & Buff Mfg
Diamond Power Specialty
Garlyn Engrg Co
Lenox Instrument Co
Nuclear Dev Lab
Sanders Labs
Selscor Div
Servonic Instruments
Southwestern Indus Elx
Texas Instruments Inc

TRANSITS, Pocket
Ainsworth & Sons
Garlynn Engrg Co
Gurley W & L E
Spiltest Inc
Warren-Knight Co

WEIGHTS & MEASURES Precision Standard
Detecto Scales
Exact Weight Scale
Gurley, W & L E
Molehouse Machine
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Designers for Industry
Haloid-Xerox

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- precision MANOMETERS
- PRESSURE CONTROLLERS

The Finest Instruments of Their Kind in the World!

√ MICROMETER STANDARD BAROMETER
Type MS-2, Primary Pressure Standard, Accuracy .001" RMS
Ranges: 0-31", 0-62", 0-100" Hg.

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√ PHOTO SCANNER, Type PSR-1
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√ PRESSURE CONTROLLER, Type PSC-2
Servo + Manual operation for automatic setting and holding pressures to within +.0005" Hg.

√ PRESSURE CONTROLLER, Type MPC-2
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Precision Pressure Standards and Controls
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- Repeatability
- Portability
- Reliable readings
- Faster operation

Repeatability
1 part to 30 thousand

The NEW CONCEPT in pressure measurement

Ranges Available
0 to 1" Hg Diff.
0 to 40" Hg ABS & Diff.
0 to 80" " "
0 to 120" " "

BI

Accessories
- Servo Readout Unit
- Automatic Pressure Control
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BUCK INSTRUMENT COMPANY
P. O. Box 930 • Boulder, Colorado

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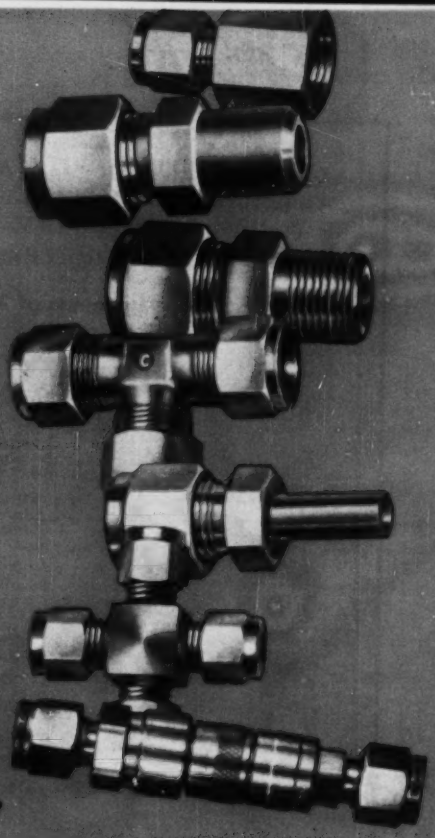

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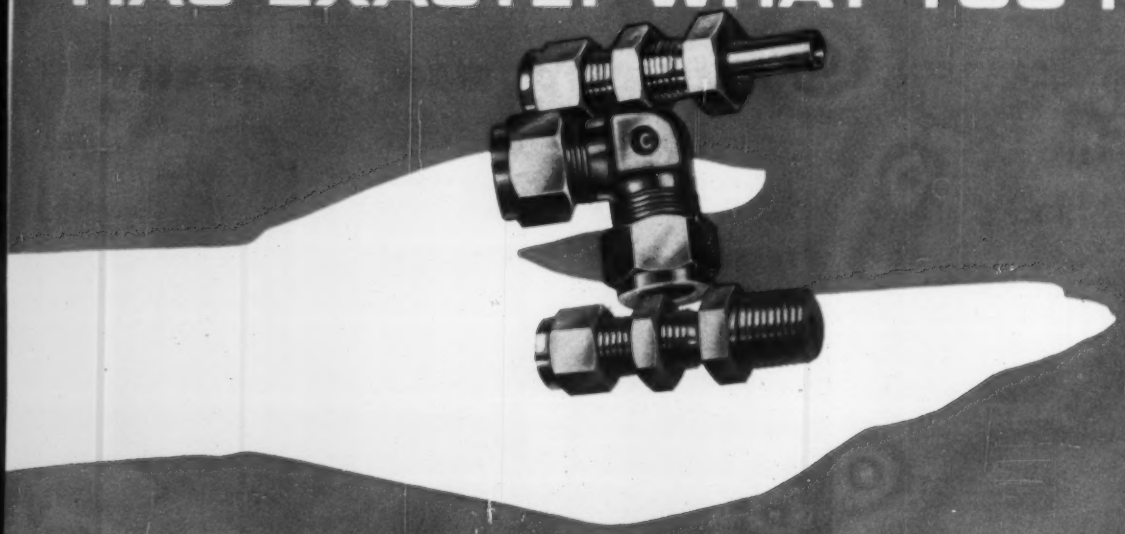
HAS EXACTLY WHAT YOU NEED



Complete selection of shapes

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No special preparation of tubing

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Measurement and Control Components

1961 BUYERS' GUIDE

8

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ELECTROMECHANICAL, HYDRAULIC,
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FOR DESIGN, OEM, AND REPLACEMENT
APPLICATIONS IN THE FIELD OF
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What's YOUR Portable Power Problem?

BURGESS has more than 5000 battery types to choose from:

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each with the highest measure of uniform dependability! This is why 2 of 3 electronic engineers specify

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IS THE MOST COMPLETE ONE-SOURCE LINE OF *Portable Power!*

EXCLUSIVE WAFER CELL CONSTRUCTION

. . . offers compactness, long shelf life, exceptional service life. A 30% increase in battery life at no increase in size.

TRANSISTOR ACTIVATORS

Burgess Activator Batteries for transistor circuits are smaller and more compact in size! Yet they deliver 30% more power because of the patented "Wafer-Cell" construction! Burgess Activators give you compact power, uniform performance, longer shelf life . . . all combined with modern packaging.

RESERVE BATTERIES

High energy output in a compact power source. Can be stored dry for years! Activated only when immersed in water. No handling of dangerous electrolyte, no spilling or leaking! Wide range of efficient operating temperatures. Designed for your specific applications.

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Burgess constructional features provide uniform quality and dependable service! Burgess exclusive patents offer sealed-in-steel protection, wide temperature range efficiency, controlled venting, patented inner cell connector, and flat discharge curve.

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A secondary rechargeable battery system which delivers high energy output from a small package! Hermatically sealed-in-steel cells eliminate annoying maintenance and addition of liquids. Can be recharged many times, by trickle or quick charge, for long lasting economical power!

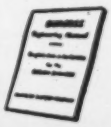
Check with your Burgess Distributor for complete local stocks of fresh BURGESS BATTERIES! Or your distributor can order from Burgess the special battery needed for your specific application!

FREE DESIGN SERVICE

For special applications, skilled Burgess Engineers offer you a FREE battery design service. Burgess will manufacture the exact battery to fit your needs, regardless of quantity required.

NEW ENGINEERING MANUAL

New 100-page dry battery handbook now available! Engineers engaged in the design of battery-powered equipment are invited to write to Burgess Battery Company, Dept. ICS Freeport, Ill., to secure a copy. Others may buy the manual for $1.00.



BURGESS BATTERY COMPANY
DIVISION OF SERVEL, INC.
FREEPORT, ILLINOIS

CIRCLE 247 ON READER-SERVICE CARD

ANTENNAS
Adams-Russell Co Inc
Ainslie Corp
Airborne Instr Lab
Aircraft Armaments
Airtronics Inc
Alford Mfg
American Electronic Labs
Amphenol Connector Div
Amphenol IP-DK Div
Amphenol-RF Prods Div
Antenna & Radome Res
Bogart Mfg Corp
Brach Mfg Corp
Brooks & Perkins
Collins Radio
Croname Inc
Diamond Antenna
Dittmore-Freimuth
Dorne & Margolin
Falstrom Company
General Mills Inc
Gulton Industries
Illumitronic Engrg
Kearfott Microwave Div
Kennedy & Co D S
Kings Electronics
Land-Air Inc
Maxson Corp W L
Model Engrg
Motorola Military Elc
Narda Corp
Pickard & Burns
Radiation Inc
Rantec Corp
Raymond Engrg Lab
Raytheon/Comm Apparatus
Reeves Instr Corp
Scala Radio Co
Scientific-Atlanta
Spectra Electronics
Sperry Microwave
Sterling Precision
Stewart-Warner Corp
Strand Engrg Co
Tapco Group
Tech Appliance Corp
Telectro Industries
Telerad Mfg Corp
United Shoe Machinery
Unitwave Inc
Virginia Electronics
Wavelinc Inc

ASSEMBLIES, Instrument
ACDC Electronics Inc
Ampco Mfg Co
Bowmar Instrument
Cleveland Metal Spec
CompuDyne Corp
Designs for Tomorrow
Dittmoore-Freimuth
Eastern Specialty Co
Federal Pacific
General Mills Inc
Kavanau Co
Kearfott Div
Land-Air Inc
Magnetic Instr Co
Maxson Corp W L
Med-Tronics Mfg Co
Model Engrg
Plumb Co D S
Precision Prods (Tulsa)
Reeves Instr Corp
Shallcross Mfg Co
Sunshine Scientific
Superite Instrument
Swiss Amer Jewel
Telectro Industries
Tri-Dex Co
Trio Laboratories
United Shoe Machinery
Virginia Electronics
Waltham Precision Instr

ATTENUATORS
ACDC Electronics Inc
Alford Mfg
Antenna & Radome Res
Arenberg Ultrasonic
Bendix Scintilla Div
Bogart Mfg Corp
Corning Glass
Daven Co
Demornay-Benardi
Diamond Antenna
Dittmore-Freimuth
Dymec
Electronic Dev Corp
Energy Kontrols
Entron Inc
FXR Inc
Filmohm Corp
General Radio
Gulton Industries
Hewlett-Packard
Kay Electric Co
Kearfott Div
Maxson Corp W L
Measurements Div
Micromat Co
Model Engrg
Muirhead Instrs Inc
Narda Corp
New London Inst
Ohmite Mfg Co
Ram Meter Inc
Rantec Corp
Rixon Electronics
Shallcross Mfg Co
Stoddart Aircraft Radio
Tapco Group
Telectro Industries
Telerad Mfg Corp
Telonic Engineering
Trad Electronics
United Shoe Machinery
Unitwave Inc
Virginia Electronics
Wavelinc Inc
Weinschel Engrg
Zenith Optical Lab

BALLS, Bronze, Monel, etc
Beamco Inc
Hartford Steel Ball
Industrial Tectronics
New Departure Div
Wall Colmonoy

BALLS, Glass
Corning Glass
Hartford Steel Ball
Industrial Tectronics
Lynn Robert M
Penn Optical & Instr

BALLS, Stainless and/or Steel, Polished (0.5mm min. dia.)
Beamco Inc
Crucible Steel
Hartford Steel Ball
Industrial Tectronics
Landis & Gyr
New Departure Div
PIC Design Corp

BALLS, Wood
Industrial Tectronics

BATTERIES, Dry
Burgess Battery
Cook Co Frank R
Mallory & Co P R
Marathon Battery
Natl Carbon Co

BATTERIES, Mercury
Burgess Battery
Mallory & Co P R
Natl Carbon Co

BATTERIES, Radioactive
Radiation Applications

BATTERIES, Solar
International Rectifier
Hoffman Electronics
Hoffman Laboratories Div

BATTERIES, Storage
Cook Co Frank R
Electric Autolite
Gulton Industries
Yardney Electric

BATTERY ELIMINATORS
DEECO
Elcor Inc
Electro Products Labs

Miniature Metal Bellows

New process provides seamless bellows in wall thicknessess from .0008" —in sizes from 0.100" O. D. to 1" O. D.

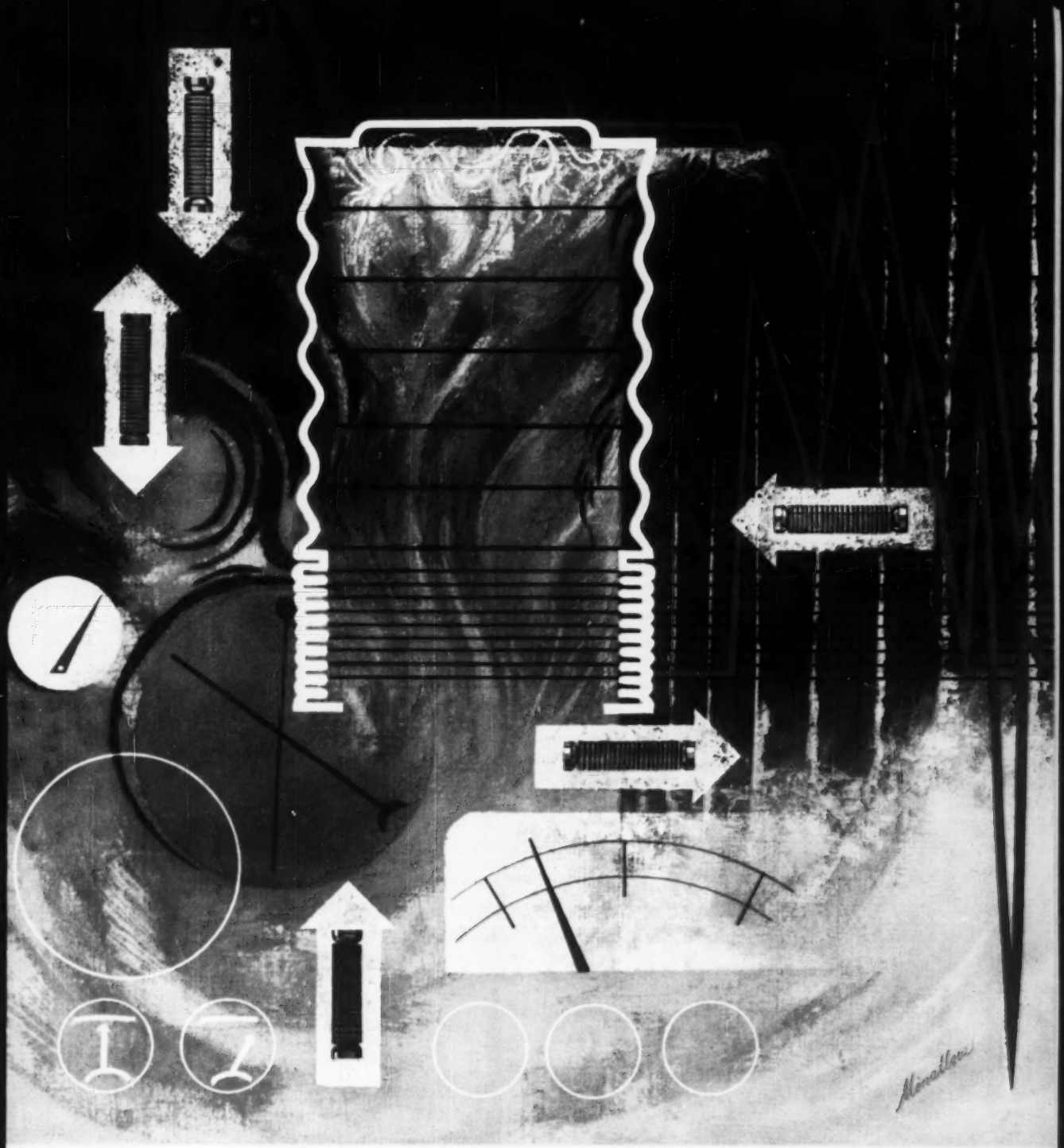
Full flexibility in the smallest sizes permit the instrument designer to miniaturize bellows devices without loss in performance.

Write for literature— free sample.

SERVOMETER CORPORATION
222-C MAIN AVENUE PASSAIC, NEW JERSEY

CIRCLE 248 ON READER-SERVICE CARD

CIRCLE 249 ON READER-SERVICE CARD →

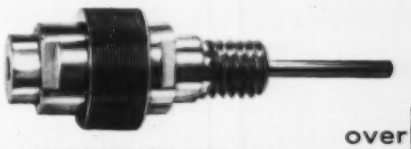


Robertshaw products that spawn new control ideas—Today's most advanced line of metallic bellows, "packaged" metallic bellows and related products . . . made by Robertshaw's Bridgeport Thermostat Division . . . offer engineers new ways to simplify designs, save space and weight, and create higher performance and reliability standards in instrument and control systems.

FLEXIBLE COUPLINGS

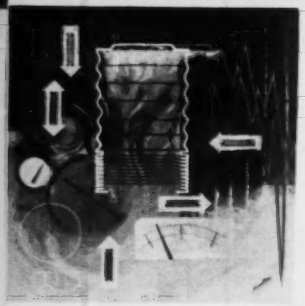
FORMSET BELLOWS

MINIATURE FORMFLEX BELLOWS



FORMWELD BELLOWS ASSEMBLIES

over



Robertshaw sets the pace with
RELIABLE PRODUCTS FOR INSTRUMENTS AND CONTROLS

Ultrasensitive Robertshaw FORMWELD® BELLOWS

for premium performance!

The ultimate in bellows reliability! Robertshaw Formweld Bellows are welded of any suitable alloy to give you the exact properties and characteristics you require. Resistance to temperatures above 1000°F., pressures to 3000 psia plus, and extreme vibration and corrosion conditions. Far more accurate because a precision welding technique perfected by Bridgeport assures closer control of effective area. And FORMWELD Bellows give you more flexibility per thickness of material, lower hysteresis, much greater load capacity without deformation, and lower spring rates. Bellows sizes from ½" O.D. to several inches O.D. Complete assemblies designed, produced, tested and delivered for peak performance.

Write for Bulletin 70.

Robertshaw MINIATURE FORMFLEX® BELLOWS

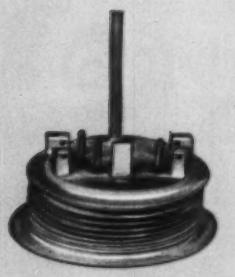
answer new miniaturization needs!

For the first time . . . hydraulically formed metallic bellows as small as ⅛" O.D. for further miniaturization in instruments, aircraft, missiles and other applications. Also available in ¼" and ⅛" O.D. sizes. Seamless construction for long, leak-free life. All units *custom*-engineered. Complete "packaged" bellows, when produced by Robertshaw, assure maximum performance standards.

*Registration pending

Write for Bulletin 10.

Robertshaw FORMSET® BELLOWS

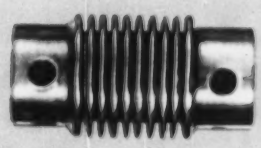


save up to 90% in bellows length!

Robertshaw FORMSET Bellows are low spring rate seamless metallic bellows with a large stroke per unit of length. Ideal as fluid or gas expansion capsules because of their low spring rate and reduced size. Now used in airborne gyroscopes to handle thermal expansion of the oil which encases the gyroscope. Available in a wide range of bellows metals and sizes . . . *custom*-engineered to your exact needs.

Write for Data Sheet 10.

Robertshaw FLEXIBLE COUPLINGS



solve backlash, misalignment problems!

Guard against misalignment friction, bearing wear, backlash and end-play with these small, rugged couplings. Absorb shock and vibration with maximum space and weight savings. Simplify your designs for servomechanisms, instruments and similar drive and control systems. The answer to all these troublesome conditions is the Robertshaw Flexible Coupling, utilizing a seamless metallic bellows connected to two hubs. Several bellows metals and hub designs available. Stock sizes accommodate shafts from ⅛" to ½". Other sizes *custom*-engineered to your needs.

Write for Data Sheet 80.

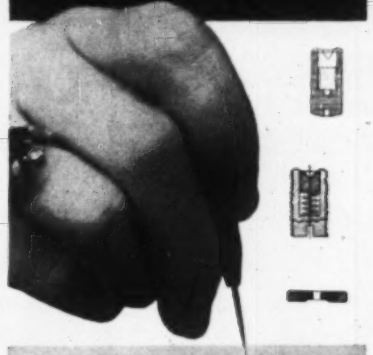
Robertshaw MR. CONTROLS

BRIDGEPORT
THERMOSTAT DIVISION
Robertshaw-Fulton Controls Company
Milford, Conn.

Bird

JEWEL BEARINGS

TINY ENOUGH



TO DO THE BIG JOB

OF ASSURING

POSITIVE ACCURACY

Aircraft and electrical instruments, measuring and timing devices, testing and recording equipment — they all require the services of sub-miniature bearings that insure a fine degree of accuracy. Bird Precision Jewel Bearings fulfill this need because they are designed to provide peak accuracy in minimum space.

Available in a wide range of standard glass and sapphire types and sizes, including complete jewel assemblies and cushion jewel assemblies, Bird Jewel Bearings can save you money on your next design. Our engineering staff is at your service to aid you with your special requirements.

Write for your free copy of our catalog, which completely describes the types, features and applications of jewel bearings.

Richard H. Bird & Co., Inc.

1 SPRUCE ST., WALTHAM, MASS.

serving industry with fine jewels since 1918

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←CIRCLE 249

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Gates Electronic
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Instrulab Inc
Interelectronics
Invar Electronics
Kollsman Instr Corp
Microloc Corp
Model Rectifier
North Electric Co
Perkin Engrg Corp
Ramm Rectifier Co
Raytheon/Comm Apparatus
Schauer Mfg Corp
Tech Apparatus Rsdrs

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Barden Corp
Boston Gear Works
Corning Glass
Fafnir Bearing Co
Gatti Inc Aurele M
Industrial Tectonics
Kearfott Div
Landis & Gyr
Microtech Div
Miniature Prec Bearings
New Departure Div
New Hampshire Ball
PIC Design Corp
Torrington Co

BEARINGS, Precious Metal

Fafnir Bearing Co
Gibson Electric
Industrial Tectonics
Moser Jewel
New Departure Div

BEARINGS, Ring

Gatti Inc Aurele M
Keller Hugo P
New Departure Div
Swiss Amer Jewel

BEARINGS, Self Lubricating

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Glits Bros Mfg
Graphite Metallizing
Industrial Tectonics
Lignum Vitae Prods
New Departure Div
Northfield Prec Instr
Nylon Moldin
Ohio Carbon Co
PIC Design Corp
Polymer Corp
Richardson Co
Stackpole Carbon
Stratos Div

BELLOWS, Kevar

Belfab Corp
PIC Design Corp

BELLOWS, Metallic, including Stainless Steel

Alloy Bellows
Automatic Control Co
Belfab Corp
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Bristol Co
Bulova Research
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Flexonics Corp
Fulton Sylphon Div
Glits Bros Mfg
Kinemotive Corp
Leemath Inc
PIC Design Corp
Servometer Corp
Sterling Precision

BELLOWS, Plastic

Gagne Associates A F

BELLOWS, Thermostatic

Bridgeport Thermostat
Kinemotive Corp
United Electric Controls

BLOWERS & FANS, Equipment Cooling

Air Marine Motors
Airesearch Mfg Co
Amco Engrg Co
Ashland Electric
Bud Radio
Eastern Air Devices
Eastern Industries
Elcor Div
General Turbine
Heinze Electric
Induction Motors Corp
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McLean Engrg Labs
Minarik Electric
Pesco Products Div
Roots-Connersville
Rotating Components Inc
Rotron Mfg Co
United Aircraft Prods
Western Design
Western Devices Inc
Western Gear Corp

BRAKES, Mechanical and Magnetic

Airborne Accessories
Autotronics Inc
Bowmar Instrument
Curmody Corp
Cutler-Hammer
Dynamatic Div
Dynamic Instr Corp
Dynex Inc
Electro-Autosizing
Electrol Corp
FAE Instrument
GE Apparatus Sales Div
General Electro Mech
Guidance Controls Corp
Hawk Tool & Engrg
Kearfott Div
Kinetic Instr Corp
Norman Hardy Assoc
Northfield Prec Instr
PIC Design Corp
Reeves Instr Corp
Sterling Precision
Technology Instr (Mass)
Ultronix Inc
Valcor Engrg Corp
Vickers Electric Prods Div
Warner Electric Brake
Western Design

CABLE ASSEMBLIES

Aeronaut & Instr Div
Airesearch Mfg Co
Airflyte Electronics
Alden Products Co
Alpha Wire Corp
Ampco Mfg Co
Amphenol Connector Div
Amphenol IP DK Div
Amphenol-RF Prods Div
Amphenol Western
Arens Controls
Bendix Scintilla Div
Berneo Engrg Corp
Brach Mfg Corp
Burndy Corp
Cable Designs Inc
Calif Technical Indus
Cannon Electric
Carol Electronics
Carter Parts Co
Chester Cable
Crosby-Teletronics Corp
Dekoron Prods Div
Designs for Tomorrow
Diamond Antenna
Dittmore-Freimuth
Dynex Inc
Eagle Signal
Eastern Specialty Co
Electronic Heat Treating
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General Mills Inc
General Radio
Gordon Co Claud S
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Hiltemp Wires Inc
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Ruge Associates
Sequoia Wire
Stiller Corp
Standard Electronics
Stretch Wire Corp
Strong Electric Corp
Sunshine Scientific
Surprenant Mfg Co
Switchcraft Inc
Tri Dex Co
Virginia Electronics
Waltham Horological

CABLE, Coaxial

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Alpha Wire Corp
Amphenol Cable
Amphenol-RF Prods Div
Birnbach Radio Co
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Cable Designs Inc
Chester Cable
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Dynex Inc
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Electric Autolite
General Radio
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Instruments Inc
Intelex Systems Inc
Land-Air Inc
Lenz Electric Mfg
Lewis Engrg Co
Microdot Inc
Miller Co L C
Phalo Plastics Corp
Precision Tube Co
Rockbestos Products
Sequoia Wire
Stretch Wire Corp
Surprenant Mfg Co
Tensolite Insul Wire
Thermax Wire
Times Wire & Cable
Western International

CABLE, Flexible, Control

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Arens Controls
Birnbach Radio Co
Boston Insulated Wire
Cable Designs Inc
Chester Cable
Clark Flex Link Shaft
Dittmore-Freimuth
Essex Wire Corp
Gore & Associates
Graphik-Circuits
International Resistance
Joy Mfg Co
Lenz Electric Mfg
Lewis Engrg Co
N P Company
Phalo Plastics Corp
Revere Corp of Amer
Rockbestos Products
Sequoia Wire
Simmonds Aerocessories
Stewart Corp F W
Stretch Wire Corp
Tapeswitch Corp
Tensolite Insul Wire
Times Wire & Cable
White Dental Mfg

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BEARINGS-BUSHINGS-ROLLERS, ETC.

- SELF-LUBRICATING
- NON-CONTAMINATING
- ACID AND CHEMICAL RESISTING
- MECHANICAL MATERIAL

THOUSANDS OF USES

Eliminates Noise . . . Avoids Contamination . . . Operates Under Moist or Wet Conditions . . . Operates Where Lubrication is Difficult or Impossible . . . Avoids Product Spoilage by Oil . . . Assures Proper Operation in Salt Water . . . Works Under Very Heavy Loads . . . Reduces Power Consumption . . . Avoids Corrosion . . . Reduces Down Time

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☐ SEND ENGINEERING DATA

Lignum-Vitae Products Corp.

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CIRCLE 251 ON READER-SERVICE CARD

CAPACITORS, Air

Capitron Div
Chicago Condenser
Dittmore-Freimuth
General Radio
Johanson Mfg
Leeds & Northrup
Millen Mfg Co
Muirhead Instrs Inc
Telechrome Mfg Corp

CAPACITORS, Ceramic

Aerovox Corp
Allen-Bradley
Astron Corp
Cambridge Thermionic
Capitron Div
Centralab Div
Corning Glass
Du-Co Ceramics
Electra Mfg
Erie Resistor
Good-All Electric
Gulton Industries
Kavamil Co
Mallory & Co P R
Mucon Corp
Physical Sciences Corp
San Fernando Electric
Sangamo Electric Co
Saronberg Ceramics
Scitest Inc

CAPACITORS, Electrolytic

Aerovox Corp
Airborne Accessories
Allen Avionics Inc
Astron Corp
Capitron Div
Efcon Incorporated
Erie Resistor
GE Apparatus Sales Div
Good-All Electric
Gulton Industries
Gudeman Co
Illinois Condenser Co
Mallory & Co P R
Ohmite Mfg Co
Sangamo Electric Co
Texas Instruments Inc

CAPACITORS, Fixed Composition

Aerovox Corp
Airborne Accessories
Astron Corp
Balco Research Labs
Capcon Inc
Capitron Div
Centralab Div
Chicago Condenser
Corning Glass
Dearborn Electronic
Erie Resistor
Fast & Co John E
GE Apparatus Sales Div
Good-All Electric
Interelectronics
Mallory & Co P R
National Spectrographic
Plastic Capacitors Inc
San Fernando Electric
Sangamo Electric Co
Stackpole Carbon
Tobe Deutschmann Corp
Vitramon Inc

CAPACITORS, Glass

Capitron Div
Corning Glass
Dearborn Electronic
Erie Resistor
Fast & Co John E
Johanson Mfg
Plastic Capacitors Inc

CAPACITORS, High Voltage

Aerovox Corp
Astron Corp
Balco Research Labs
Bendix Scintilla Div
Capcon Inc
Capitron Div AMP
Centralab Div
Chicago Condenser
Corning Glass
Corson Electric Mfg
Dearborn Electronic
Electronic Fabricators
Epic Inc
Erie Resistor
Fast & Co John E
Film Capacitors Inc
Filtron Co
GE Apparatus Sales Div
Gudeman Co
Gulton Industries
Interelectronics
Jennings Radio Mfg

When Using This Guide look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

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FREE: Send for free catalog and dimension specification sheets

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CIRCLE 253 ON READER-SERVICE CARD

JFD Electronics
Johanson Mfg
Plastic Capacitors Inc
Rohde & Schwarz
San Fernando Electric
Sangamo Electric Co
Texas Instruments Inc
Tobe Deutschmann Corp

CAPACITORS, Metallized Paper

Aerovox Corp
Airborne Accessories
Astron Corp
Balco Research Labs
Capcon Inc
Capitron Div AMP
Chicago Condenser
Dearborn Electronic
Fast & Co John E
Film Capacitors Inc
Filtron Co
Gudeman Co
Intelex Systems Inc
Interelectronics
Marathon Electric
Sanfernando Electric
Sangamo Electric Co
Tobe Deutschmann Corp

CAPACITORS, Mica

Aerovox Corp
Airborne Accessories
Balco Research Labs
Bendix Scintilla Div
Capitron Div AMP
Corson Electric Mfg
Erie Resistor
Fast & Co John E
General Radio
Interelectronics
Muirhead Instrs Inc
Sangamo Electric Co

CAPACITORS, Paper

Aerovox Corp
Astron Corp
Balco Research Labs
Capcon Inc
Capitron Div AMP
Chicago Condenser
Corson Electric Mfg
Dearborn Electronic
Fast & Co John E
Film Capacitors Inc
Filtron Co
GE Apparatus Sales Div
Gudeman Co
Gudeman Co of Calif
Illinois Condenser Co
Mallory & Co P R
Marathon Electric
Muirhead Instrs Inc
Plastic Capacitors Inc

When Using This Guide look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

San Fernando Electric
Sangamo Electric Co
Stromberg Carlson Co
Tobe Deutschmann Corp

CAPACITORS, Plastic Dielectric

Aerovox Corp
Airborne Accessories
Astron Corp
Balco Research Labs
Bendix Cincinnati Div
Capitron Div AMP
Capcon Inc
Chicago Condenser
Component Research
Corson Electric Mfg
Dearborn Electronic
Electro-Measurements
Electronic Applications
Electronic Fabricators
Erie Resistor
Fast & Co John E
Film Capacitors Inc
Filtron Co
GE Apparatus Sales Div
General Radio
Gudeman Co
Gudeman Co of Calif
Interelectronics
Landaverk Electrometer
Mallory & Co P R
Marathon Electric
Pimex Inc
Plastic Capacitors Inc
San Fernando Electric
Sangamo Electric Co
Tobe Deutschmann Corp

CAPACITORS, Precision (0.01%)

Allen Avionics Inc
Balco Research Labs
British Industries
Capcon Inc
Centralab Div
Corning Glass
Electro-Measurements
Erie Resistor
Fast & Co John E
General Radio
Gudeman Co
Guiton Industries
Hughes Products
Illinois Condenser Co
Interelectronics
Johanson Mfg
Kavanau Co
Leeds & Northrup
Mallory & Co P R
Marathon Electric
Muirhead Instrs Inc
San Fernando Electric
Sangamo Electric Co
Texas Instruments Inc
Tobe Deutschmann Corp
Winslow Company Inc

CAPACITORS, Tantalum

Aerovox Corp
Astron Corp
Balco Research Labs
Efcon Incorporated
Electronic Fabricators
GE Apparatus Sales Div
Guiton Industries
ITT Components Div
Intelex Systems Inc
Ohmite Mfg Co
Sangamo Electric Co
Texas Instruments Inc
U.S. Semiconductor Prods

CAPACITORS, Vacuum

Amperex Electronic
Balco Research Labs
Dolinko & Wilkens
Fast & Co John E
Jennings Radio Mfg
Mallory & Co P R

CAPACITORS, Variable

Aerovox Corp
Barker & Williamson
Bud Radio
Cambridge Thermionic
Centralab Div
Component Research
Corning Glass
Dittmore-Freimuth
Erie Resistor
General Radio
Guiton Industries
Hughes Products
International Rectifier
Jennings Radio Mfg
JFD Electronics
Johanson Mfg
McCoy Electronics
Millen Mfg Co
Muirhead Instrs Inc
Oak Mfg Co
Radio Condenser Co
Telechrome Mfg Corp

CAPACITORS, Vitreous Enamel

Physical Sciences Corp
Vitranson Inc

CASES, Instrument

Alpitec Inc
Ames Engrg Co
Artisan Metal Works
Bristol Co
Brooks & Perkins
Bud Radio
Calif Chassis
Churchill Lighting
Cronamo Inc
Danco Metal Products
Eugene Engrg Co
Falstrom Company
Fischer & Porter Co
General Railway Signal
Keystone Mfg Co
Littleford Bros
M M Enclosures
Milton Ross Metals
PIC Design Corp
Premier Metal Products
Rueckert Mfg Co
Skydyne Inc
Statolet Corp
Waldom Electronics
Warwick Products

CHAINS, Miscellaneous

Bead Chain Mfg Co
Boston Gear Works
Jeffrey Mfg
Sierra Engineering
Warren Knight Co

CHARTS, Electrosensitive and Spark

Alden Electronic
Alfax Paper & Engrg Co
Bristol Co
Fawley-Brost
Graphic Controls Corp

Buy Direct and Save!

REPLACEMENT CHART PAPERS

Now Available for All Recorders from Original Manufacturer

You've probably already used Judson Bigelow Chart Papers, sold at a premium under your recorder's brand name. Now you can order direct from J-B and save the extra markup! For many years J-B has manufactured the very finest quality charts for all makes, models and applications. Get more accurate readings . . . at lower direct-to-you prices.

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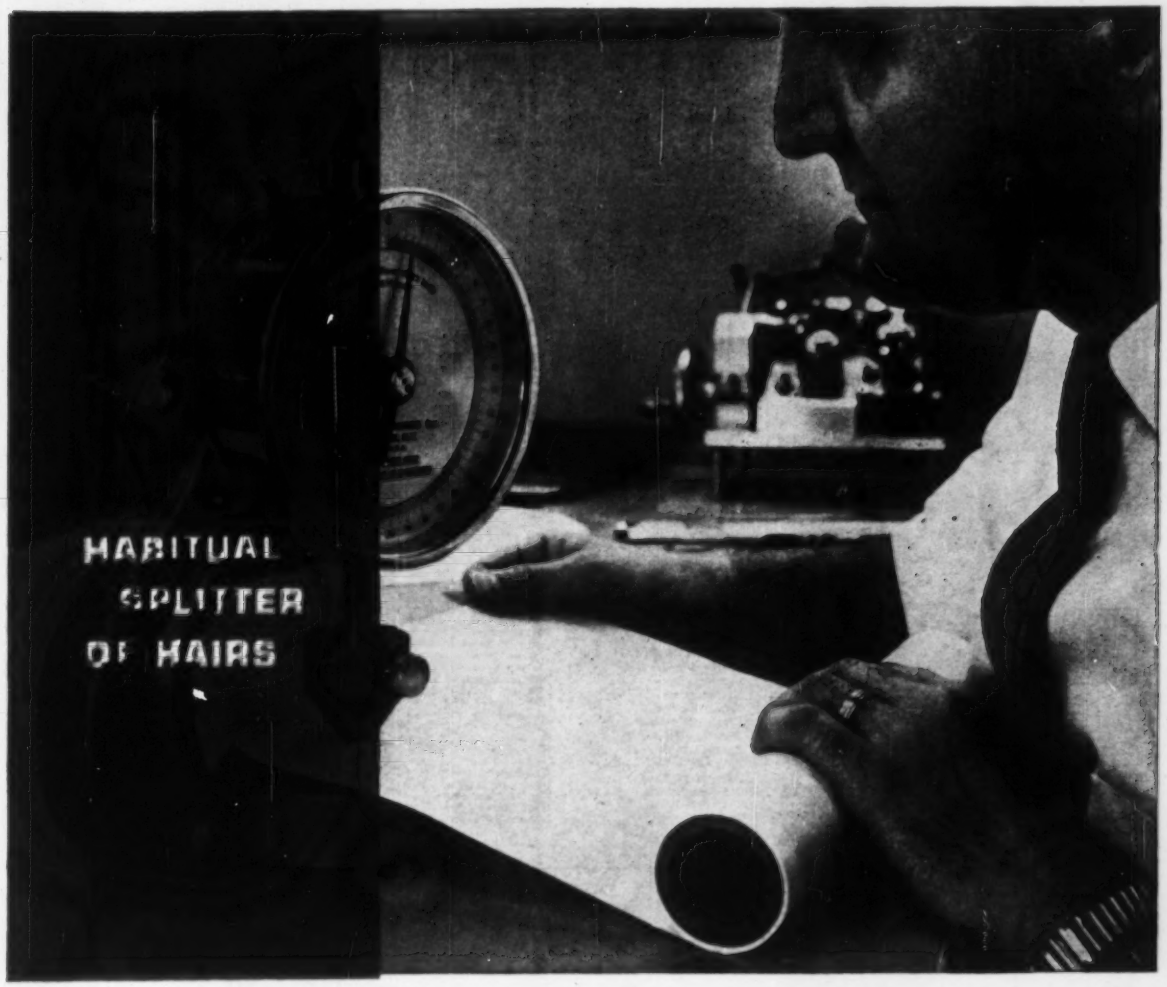
Replacement Chart Papers

CIRCLE 254 ON READER-SERVICE CARD



. . . *because a mil can matter greatly in* RECORDING CHART PERFORMANCE

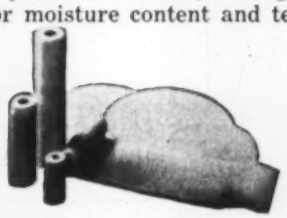
Even a fraction of a mil can bulk large in the thickness of a recording chart. That's why John Mazurowski and his thickness micrometer are so important to chart users.

A process change in an eastern oil refinery, for example, called for a longer strip chart in a temperature recorder — but the diameter of the roll could be no bigger than before. GC engineers solved this problem by working with our paper mills to reduce chart paper thickness from 0.00275" to 0.0019" while preserving strength and flexibility.

To make sure our charts meet the requirements of your instruments, GC engineers test paper stock for moisture content and tear-strength, too. This rigid inspection of paper that is produced exactly to GC specifications is a major reason why GC Recording Charts consistently fulfill their promise of accurate performance.

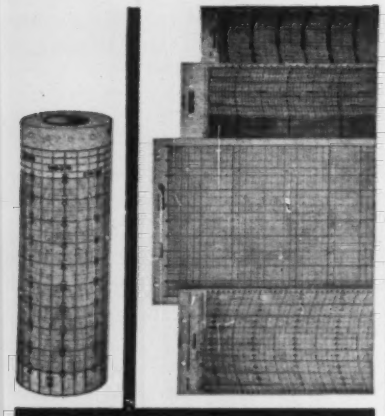
Other reasons for GC quality include our special formula printing inks, our exclusive innovations in plate-making and printing, and the scrupulous humidity control maintained throughout our manufacturing and storage areas.

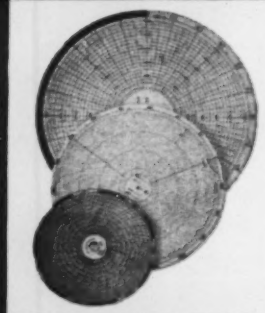
GC Recording Charts have become standard equipment in more than 5,000 plants today. We stock more than 15,000 different charts—and will design and produce accurate special-purpose charts. Send for our 1960 Stock List — and for sample charts.

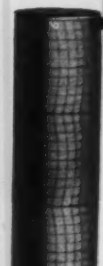


RECORDING CHARTS

CIRCLE 255 ON READER-SERVICE CARD







Dukane Corp
Electronic System Dev
Electrosolids Corp
Engineered Electronics
Erie Resistor
Filtron Co
GE Heavy Mil Elx Dept
Genesys Corp
Graphik-Circuits
Green Rectifier
Hamilton Standard Div
Hathaway Instruments
Hoover Electronics
Hughes Products
International Resistance
Kearfott Div
Link Div
MacLaren & Co F B
Melpar Inc
Micro Gee Products
Microloc Corp
Milton Ross Metals
Molex Products
Networks Elx Corp
Norbatrol Electronics
North Electric Co
Packard Bell
Parmeglee Mfg Co
Philbrick Researches Inc
Raytheon/Indus Comp
Raytheon/Semiconductor
Regent Controls
Rixon Electronics
Rotary Devices Corp
Sumners Gyroscope
Solid State Electronics
Sunshine Scientific
Technitrol Engrg
Transitron Electronic
Ucinite Co
Ultronix Inc
United Control Systems
Virginia Electronics
Vol-Shaw Electronics
Walkirt Co
Wells Electronics

CLAMPS, Cable, Conduit, Tube

Adalet Mfg Co
Airesearch Mfg Co
Alden Products Co
Amatom Electronic
Ampco Mfg Co
Amphenol Connector Div
Burndy Corp
Commercial Plastics
Electrovert Inc
Federal Screw Products
Gries Reproducer
International Elx Res
Malco Mfg Co
McIlvaine O T
Millen Mfg Co
Nylon Molding
Panduit Corp
Pyle-National Co
Richco Plastic Co
TA Mfg Corp
Thomas & Betts Co
Waldom Electronics
Weckesser Co
Wilmington Fibre

CLIPS, Battery (see also Connectors)

Airesearch Mfg Co
Air-O-Tronics Engrg
Ampco Mfg Co
Cambridge Thermionic
Commercial Plastics
Electrovert Inc
Federal Screw Products
General Cement
Moeller Electric
Rodale Mfg Co
Tech Apparatus Bldrs
Ucinite Co

CLIPS, Fahnestock

Amatom Electronic
Federal Screw Prods
General Cement

CLIPS, Fuse, Grid, Test

Bud Radio
Federal Screw Products
Gout Co Inc Fred
Industrial Devices Inc
Kulka Electric
Millen Mfg Co
Moeller Electric
National Tel-Tronics
Rapid Specialties Co
Raytheon/Indust Comp
Ucinite Co

CLOCKWORKS, Electric including Instrument Drives

Alina Corp
Anglo Corp
Borg Clock Div
Bristol Co
Bulova Research
Cramer Controls Corp
Edison Industries T A
El Products Corp
Geotechnical Corp
Hamilton Watch Co
Haydon Co A W
Haydon Instrument
Ingraham Co
Micronics Div
Montgomery Mfg
Parsham Inc
Rockwell Mfg Co
Sangamo Electric Co
Waltham Precision Instr

CLOCKWORKS, Mechanical, including Instrument Drives

Alina Corp
Borg Clock Div
Bristol Co
Bulova Research
Cramer Controls Corp
Edison Industries T A
Esterline Angus
Geotechnical Corp
Hamilton Watch Co
Haydon Instrument
Ingraham Co
Pacific Transducer Corp
PIC Design Corp
Plumb Co D B
Precision Prods (Tulsa)
Rockwell Mfg Co
Sangamo Electric Co
Swiss Amer Jewel
Waltham Precision Instr

CLOCKWORKS, Pneumatic including Instrument Drives

Alina Corp
American Meter Co
Haydon Instrument
Rockwell Mfg Co

CLUTCHES, Mechanical, Magnetic

Abrams Instrument
Actuator Prods Corp
American Electronics
Beckman/Helipot Div
Bowman Instrument
Carmody Corp
Cutler-Hammer
Digitronics Corp
Dynamatic Div
Dynamic Instr Corp
Dynex Inc
Electroid Corp
FAE Instrument
General Electro Mech
Graphite Metallizing
Guidance Controls Corp
Hauk Tool & Engrg
Hoover Electric Co
Instru-Lee Corp
Jeffrey Mfg
Kearfott Div
Kinetic Instr Corp
Kollsman Instr Corp
Leemath Inc
Norman Hardy Assoc
Northfield Prec Instr
PIC Design Corp
Precision Mechanisms Corp
Reeves Instr Corp
Servo-Dynamics Corp
Servo Systems Co
Sterling Precision
Technology Instr (Calif)
Technology Instr (Mass)
Utronix Inc
Valor Engrg Corp
Warner Electric Brake
Zero Max Co

COILS, including RF and IF

ACDC Electronics Inc
Aerovox Corp
Allen Avionics Inc
Barker & Williamson
Bud Radio
Bulova Watch Co
Caldwell Burns Mfg
Cambridge Thermionic
Comar Electric
Corning Glass
Coto-Coil Co Inc
Dietz Design
Dittmore-Freimuth
Essex Electronics
Forbes and Wagner
Fugle-Miller Labs
Gates Radio Co
Goslin Electric
Harder Co Donald C
Illumitronic Engrg
Millen Mfg Co
Natl Electronics (Wyo)
North Hills Electric
North Hills Electronics
P and H Electronics
Polyphase Instr Co
Telectro Industries
Trak Electronics
Tri-Dex Co
US Electronics
United Transformer
Valor Instruments
Varo Mfg Co
Virginia Electronics
Warren Transformer
Wells Electronics
Wickes Engrg & Constr

COILS, Toroidal

ACDC Electronics Inc
Aerovox Corp
Airpax Electronics
Allen Avionics Inc
Barker & Williamson
Basler Electric
Bulova Watch Co
Burrell & Co
Capitron Div
Comar Electric
Communication Accessories
Chicago Std Transformer
Dietz Design
Dittmore-Freimuth
D and R Ltd
Durakool Inc
EMP Electronics Res Lab
ESC Corp
Electro Networks
Electrodynamic Instr
Essex Electronics
Forbes and Wagner
Freed Transformer
Fugle-Miller Labs
Goslin Electric
Gulton Industries
Harder Co Donald C
Hathaway Instruments
Interelectronics
Kavamil Co
Kelvin Electric
Magnetics Inc
Mercury Transformer
Mico Instr Co
Milton Ross Metals
Natl Electronics (Wyo)
Norbatrol Electronics
North Electric Co
North Hills Electric
North Hills Electronics
Pacific Instrument Co
Polyphase Instr Co
Precision Inc
Pulse Engrg
Railway Communications
Rixon Electronics
Sangamo Electric Co
Tube Deutschmann Corp
Torwico Electronics
Trak Electronics
Transformers Inc
Tri-Dex Co
United Transformer
Universal Toroid Coil
Valor Instruments
Vari-L Co
Varo Mfg Co
Virginia Electronics
Warren Transformer
Wells Electronics
Wickes Engrg & Constr

COILS, Transformer

ACDC Electronics Inc
Aerovox Corp
Airpax Electronics
Allen Avionics Inc
Amer Meas & Control
Bulova Watch Co
Capitron Div
Carruthers & Fernandez
Chicago Std Transformer
Communication Accessories
Dietz Design
Dittmore-Freimuth
Durakool Inc
EMP Electronics Res Lab
Electrodynamic Instr
Electrical Windings
Essex Electronics
Freed Transformer
Goslin Electric
Green Rectifier
Harder Co Donald C
Illumitronic Engrg
Interelectronics
Kavamil Co
Kelvin Electric
Mercury Transformer
Natl Electronics (Wyo)
North Electric Co
P and H Electronics
Pacific Instrument Co
Polyphase Instr Co
Pulse Engrg
Rixon Electronics
Sangamo Electric Co
Standard Electrical Prods
Telectro Industries
Transformers Inc
US Electronics
United Transformer
Universal Toroid Coil
Valor Instruments
Varo Mfg Co
Virginia Electronics
Warren Transformer
Wells Electronics
Wickes Engrg & Constr

COMMUTATORS, including Collector Rings

Airflyte Electronics
Applied Electronics
Applied Science Corp
Arnoux Corp
Carter Mfg
Collectron Corp
Cushman Precision Ind
Electro Development
Electro Instruments
Electro-Miniatures
General Devices
Genesys Corp
Gibson Electric
Graphite Metallizing
Instr Development Labs
Lind Instruments
Magnavox Co
Model Engrg
Poly-Scientific Corp
Rotary Devices Corp
Slip Ring Co
Technology Instr (Calif)
Wiancko Engrg Co

CONDUCTIVITY CELLS

Foxboro Company
Industrial Instrs Engrg
Industrial Instrs Inc
Largent Co
Leeds & Northrup
Semi-Elements Inc
Victory Engrg Corp

ANALYTICAL INSTRUMENTS

Electrolytic Conductivity

Complete line of instruments for the measurement and control of solution concentration and dissolved oxygen and hydrogen gasses.

Thermal Conductivity

Complete line of instruments for monitoring purity values in gas streams and for wide application in gas impurity analysis.

Industrial Instruments Inc

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CONDUCTIVITY CELLS (thermal)

- "Therma Bridge" cells, sensitivity low background noise for high and low temperature applications.
- Available in either hot-wire tungsten or thermistor sensing elements.
- Complete line of "Therma Bridge" thermal conductivity gas analyzers and associated instruments.

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Industrial Instruments Engineering Corp.

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CIRCLE 258 ON READER-SERVICE CARD

CONDUCTIVITY CELLS (ELECTROLYTIC)

- Complete range of cell constants, covering applications from the measurement of ultra-pure water to highly concentrated solutions.
- Wide range of body and electrode materials.
- High temperature and high pressure designs available.
- Automatic temperature compensation.

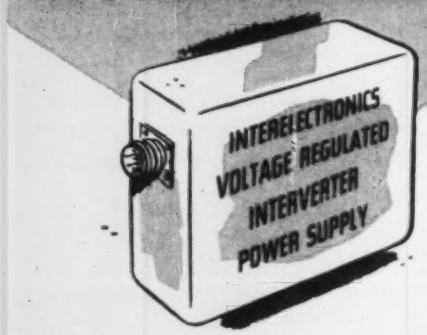
Write for complete catalog

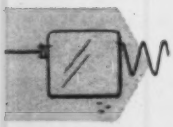
Industrial Instruments Inc

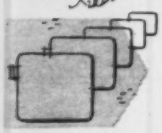
89 Commerce Road Cedar Grove Essex County N J

CIRCLE 259 ON READER-SERVICE CARD

PROVEN RELIABILITY—
SOLID-STATE POWER INVERTERS,
over 260,000 logged operational hours—voltage-regulated, frequency-controlled, for missile, telemeter, ground support, 135°C all-silicon units available now—







Interelectronics all-silicon thyratron-like gating elements and cubic-grain toroidal magnetic components convert DC to any desired number of AC or DC outputs from 1 to 10,000 watts.

Ultra-reliable in operation (over 260,000 logged hours), no moving parts, unharmed by shorting output or reversing input polarity. High conversion efficiency (to 92%, including voltage regulation by Interelectronics patented reflex high-efficiency magnetic amplifier circuitry.)

Light weight (to 6 watts/oz.), compact (to 8 watts/cu. in.), low ripple (to 0.01 mv. p-p), excellent voltage regulation (to 0.1%), precise frequency control (to 0.2% with Interelectronics extreme environment magnetostrictive standards or to 0.0001% with fork or piezoelectric standards.)

Complies with MIL specs. for shock (100G 11 misc.), acceleration (100G 15 min.), vibration (100G 5 to 5,000 cps.), temperature (to 150 degrees C), RF noise (I-26600).

AC single and polyphase units supply sine waveform output (to 2% harmonics), will deliver up to ten times rated line current into a short circuit or actuate MIL type magnetic circuit breakers or fuses, will start gyros and motors with starting current surges up to ten times normal operating line current.

Now in use in major missiles, powering telemeter transmitters, radar beacons, electronic equipment. Single and polyphase units now power airborne and marine missile gyros, synchros, servos, magnetic amplifiers.

Interelectronics—first and most experienced in the solid-state power supply field produces its own all-silicon solid-state gating elements, all high flux density magnetic components, high temperature ultra-reliable film capacitors and components, has complete facilities and know how—has designed and delivered more working KVA than any other firm!

For complete engineering data, write Interelectronics today, or call LUdlow 4-6200 in New York.

INTERELECTRONICS CORP.
2432 Gr. Concourse, N. Y. 58, N. Y.

CIRCLE 260 ON READER-SERVICE CARD

CONNECTORS, Including Plugs, Clips, Posts, Jacks, etc.

Aitesearch Mfg Co
Air-O-Tronics Engrg
Alden Products Co
AMP Inc
Ampco Mfg Co
Amphenol Connector Div
Amphenol IP DK Div
Amphenol RF Prods Div
Amphenol Western
Armel Electronics
Audio Develo ment Co
Automatic Metal Prods
Bead Chain Mfg Co
Bendix Scintilla Div
Buchanan Electl Prods
Burndy Corp
Cambridge Thermionic
Cannon Electric
Carter Parts Co
Consol Electrodynamics
Dage Electric Co
Deutsch Co
Dialight Corp
Elco Corp
Entron Inc
Escon Inc
Garde Mfg Co
Garlock Electronic Prod
General Cement
General Radio
Gordon Co Claud S
Gorn Electric
Graphite Metallizing
Grayhill Inc
Gremar Mfg Co
Jan Hardware Mfg
Jones Div Howard B
Joy Mfg Co
Kings Electronics
Kulka Electric
Malco Mfg Co
Mandex Mfg Co Inc
Microdot Inc
Milton Ross Metals
Moeller Electric
Molex Products
Motorola Military Elx
National Tel-Tronics
North Electric Co
Precision Connectors
Pyle-National Co
Raytheon/Indust Comp
Revere Corp of Amer
Richards Co Arklay S
Rodale Mfg Co
Smith Mfg Co Inc
Standard Electric Time
Stromberg Carlson Co
Superior Electric Co
Switchcraft Inc
Tech Apparatus Bldrs
Telectronic Mfg Corp
Telectro Industries
Thermo Electric Co
Thomas & Betts Co
Thor Ceramics Inc
Ucinite Co
UB Components
Vector Electronic
Waldom Electronics
Waltham Horological
Western International
Wood Electric Co

CONNECTORS, Printed Circuit

AMP Inc
Airborne Instr Lab
Ampco Mfg Co
Amphenol Connector Div
Amphenol IP DK Div
Amphenol-RF Prods Div
Amphenol Western
Armel Electronics
Automatic Metal Prods
Burndy Corp
Cambridge Thermionic
Cannon Electric
Dejur Amsco
Elco Corp
Garde Mfg Co
Gorn Electric
Gulton Industries
Kulka Electric
Malco Mfg Co
Microdot Inc
Milton Ross Metals
Molex Products
Precision Connectors
Space Products
Switchcraft Inc
Ucinite Co
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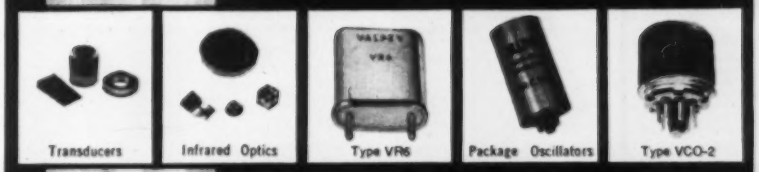

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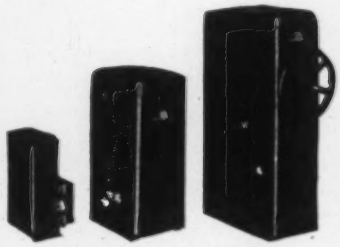

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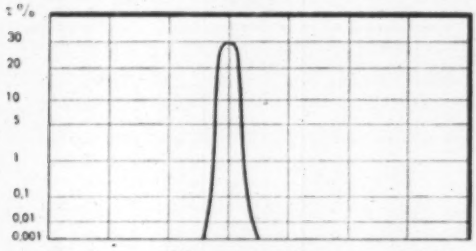

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FILTERS, Light and Optical

Applied Instruments Inc
Baird-Atomic Inc
Bausch & Lomb
Bubi Optical Co
Bushnell Co D P
Commercial Optical Mfg
Corning Glass
Eastman Kodak
Edmund Scientific
Fish-Schurman Corp
GBS Corp
Gordon Enterprises
Graf-Apsco Co
Infrared Industries
Jan Hardware Mfg
Keuffel & Esser
Lancaster Glass Corp
Lynn Robert M
Metavac Inc
Optical Coating Lab
Paneto Mirrors Inc
Phoenix Precision Instr
Pacific Universal Prdds
Raytheon/Equipt Div
Republic Lens Co
Simpson Optical
Spectracoat
Telectro Industries
Tiffen Optical
Unertl Optical Co
Varo Mfg Co
Zenith Optical Lab

FILTERS, Liquid

Aero Supply Mfg
Air Maze Corp
Airmatic Valve Inc
American Felt Co
Briggs Filtration
Commercial Filters Corp
Dollinger Corp
Ertel Engrg Corp
Sel-Rex Corp

FITTINGS, Tube and Pipe

Aeroquip Corp
Aluminum Co of Amer
Autoclave Engineers
Cajon Machine Co
Commercial Plastics
Corning Glass
Crawford C B
Crawford Fitting
Cruetible Steel
Dragon Engrg Co
Flodar Corp
Grinnell Co
Henry Valve Co
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OPW-Jordan
Parker-Hannifin Corp
Snap-Tite Inc
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Crawford Fitting
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Flodar Corp
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Imperial Brass Mfg
Parker-Hannifin Corp
Pressure Products Indst
Ruska Instrument Corp
Snap-Tite Inc
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FITTINGS, Quick-Disconnect

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Aircraft Armaments
Airtron Inc
American Pamcor Inc
Crawford C B
Crawford Fitting
DeVilbiss Co
Henry Valve Co
Imperial Brass Mfg
Joy Mfg Co
Kulka Electric
OPW-Jordan
Parker-Hannifin Corp
Perfecting Service Co
Snap-Tite Inc
Thomas & Betts Co
Waldom Electronics
Weatherhead Ft Wayne

FLOATS, Miscellaneous (see also Level-Cat. I)

Allen-Bradley
Nicholson & Co W H
Revere Corp of Amer

FUSES, Instrument

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Bussmann Mfg Div
Littelfuse Inc

GAGE GLASS TUBES

Bache & Co Semon
Corning Glass
Ercona Corp
Fischer & Porter Co
GBS Corp
Lancaster Glass Corp
Manning Maxwell & Moore
Philadelphia Scien Glass
Precision Glass Products
Uehling Instrument
Wallace & Tiernan

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Crump Instrument
Daystrom/Weston
Esterline Angus
Federal Pacific
Geotechnical Corp
Hamilton Watch Co
Hathaway Instruments
Howell Instruments
Illinois Testing Labs
Leeds & Northrup
M-H Hetland Div
Massa Div
M-H Rubicon Instrs Div
Offner Electronics
Photron Instr Co
Sanborn Company
Shalleross Mfg Co
Simpson Electric
Southwestern Indus Elx
Sprengnether Instr
Taper Micrometer
Winslow Company Inc

GEAR DEVICES, Water Meter and Register

Alina Corp
Bendix Utica Div
Buffalo Meter Co
Dynex Inc
Gear Specialties
Instru-Lec Corp
Plumb Co D S
U S Gear Corp
Waldom Electronics

GEARS, Precision, including Gear Trains, Gear Hubs, Pinions, etc.

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Allen Business Machines
Asam Mfg Co
Atlas Precision Prods
Beamco Inc
Beaver Gear Works
Beckman/Helipot Div
Bellmore Gear Div
Boehme Inc H O
Boston Gear Works
Bowmar Instrument
Cramer Controls Corp
Croname Inc
Daystrom/Mil Elx
Dittmore-Freimuth
Dynamic Gear Co
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Edison Industries T A
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FAE Instrument
Fairchild Camera & Instr
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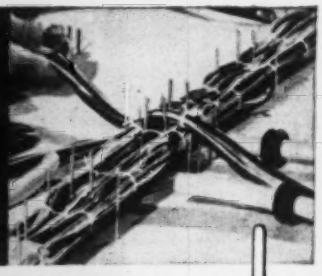
SPEED HARNESS ASSEMBLY



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Missouri Res Labs
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Northfield Prec Instr
PIC Design Corp
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Planet Instrument
Plumb Co D S
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Dimco-Gray
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Dittmore-Freimuth
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Elco Corp
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Lancaster Glass Corp
McDanel Refractory
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Raytheon Microwave
Saxonburg Ceramics
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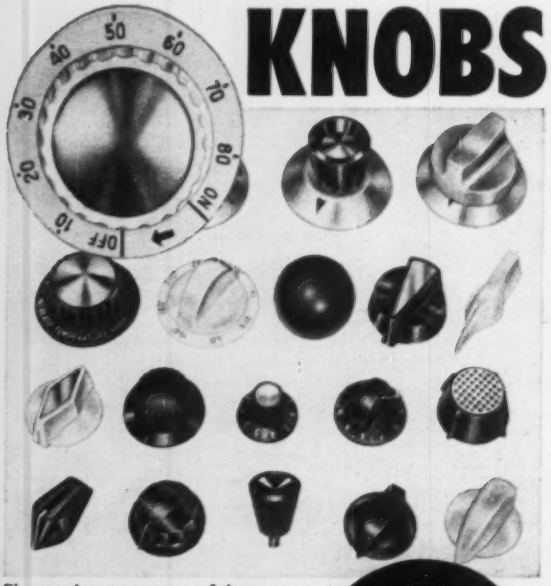
look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

KNOBS



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Dial Skirted Round	50-3-1	70-3-2	90-3-2	125-3-2	175-3-2	225-3-2
Pointer	50-4-1	70-4-2	90-4-2	—	—	—
Skirted Pointer	50-5-1	70-5-2	90-5-2	—	—	—
Crank	—	—	—	125-6-2	175-6-2	225-6-2
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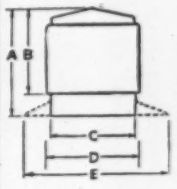

Series	A	B	C	D	E
70	.80	.62	.65	.72	1.14
90	1.03	.80	.83	.93	1.51
125	.87	.70	1.16	1.27	1.82
175	1.09	.85	1.67	1.77	2.45
225	1.11	.89	2.16	2.27	3.01

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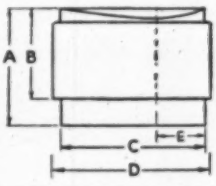
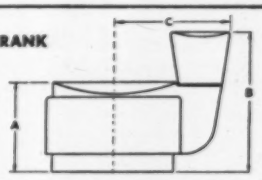


Series	A	B	C	D	E
70	.80	.62	.94	1.06	.32
90	1.03	.80	1.23	1.38	42

CRANK



Series	A	B	C
125	.87	1.38	1.09
175	1.09	1.77	1.50
225	1.11	1.80	1.75

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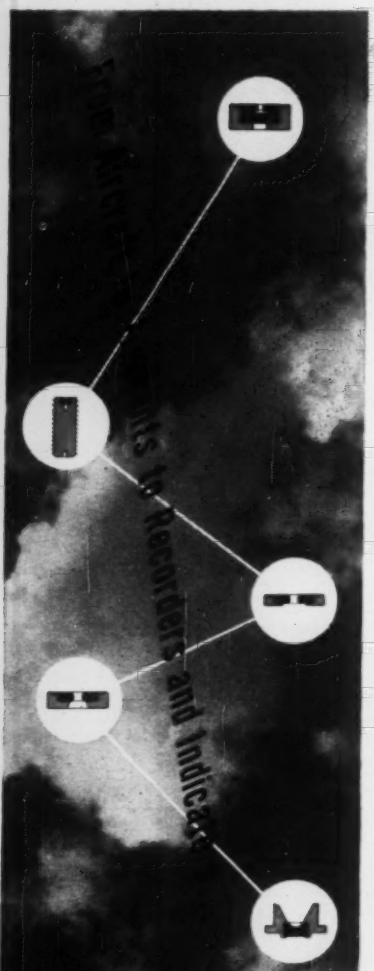

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Drake Mfg Co
Dynex Inc
Eder Instrument
GRS Corp
Goerz Amer Optical
Gordon Enterprises
Lancaster Glass Corp
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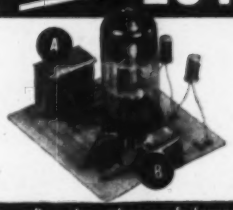

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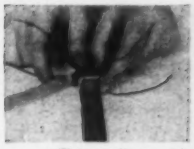

Wraps easily.

Inserts readily to convert existing non-shielding enclosures.

Shielding cables reduces magnetic radiation or pickup.

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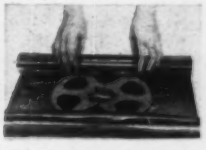

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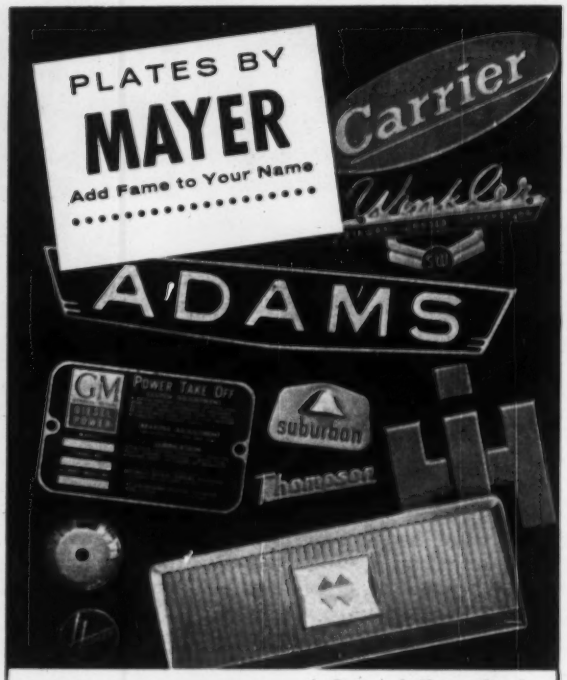

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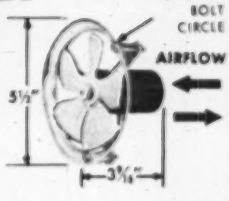

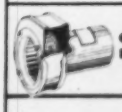
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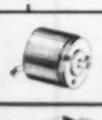
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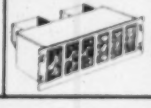
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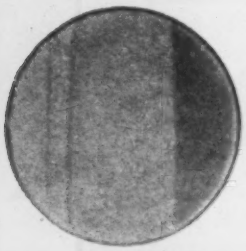

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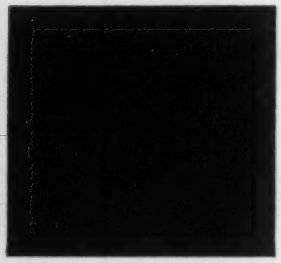

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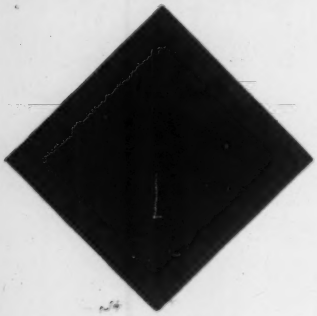

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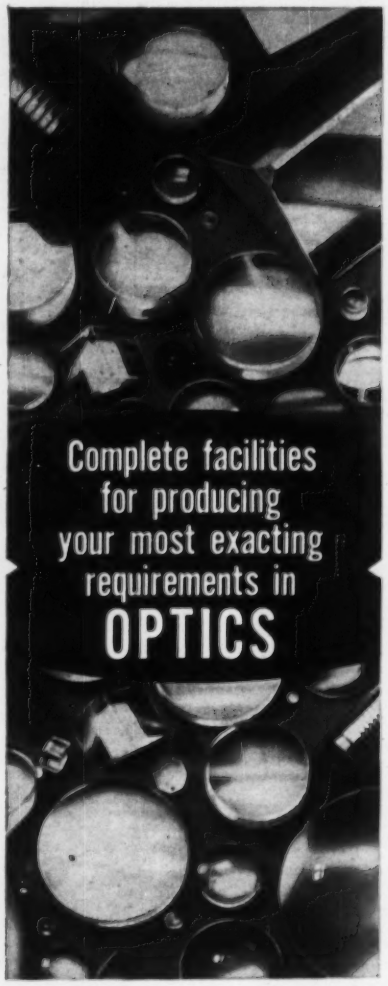

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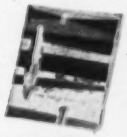

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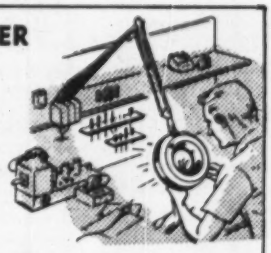

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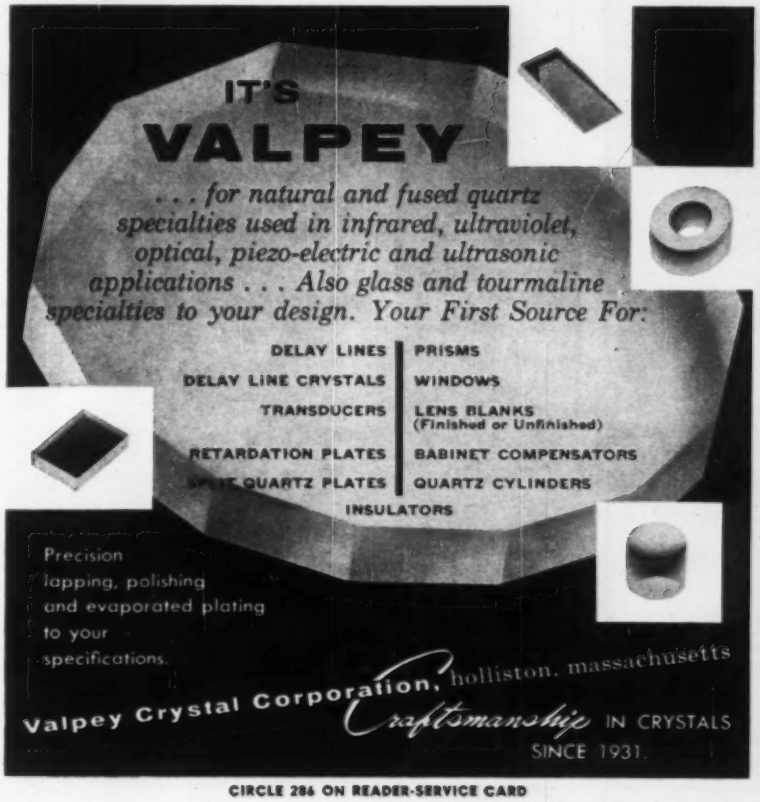
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With Bailey Panels you get:

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Greater Economy—You eliminate the costly details of purchasing, receiving, and installing hundreds of pieces of equipment.
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Attractive Appearance—Panel is designed to look right as well as work right.
More Efficient Design—Standard contours were developed as a result of research in the field of functional design, glare elimination, and accessibility of controls.

Request Product Specification G71-7.

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VENTILATED or NON-VENTILATED
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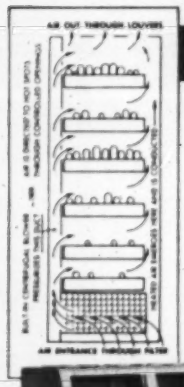
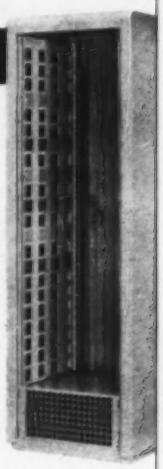




- Complete package modular construction
- Mount standard 19", 24" or 30" wide panels
- Panel space in multiples of 1¾"
- All-welded frames of 12-ga. or heavy duty ¾6" steel, or .125" aluminum alloy—tapped 10-32 or 12-24
- Steel or aluminum skin and doors
- Hinged, lift-out or bolt-on doors—with or without louvers, glass panels or cut-outs
- continuously adjustable rear mounting rails of 12-ga. steel
- mounting built in for 'Chassis-Trak' slides.

Heavy duty MC type cabinets—surpass 30 G shock and vibration requirements of MIL-T-4807 (steel construction)—reinforcement for higher shock loading available.

CONSOLES—24", 30", 36" in depth. Modular shapes to fit 'U' or 'L' floor plans. Panel angled 15°, 30°, 45° or 60°.

CABINETS—18" to 36" deep in 2" increments.

Cool exactly where needed with fully controlled built-in cross-ventilation system—proven in 6 years operation in Government labs. Adjustable airflow pattern to your exact needs is effected by snap-in closures—no "chimney" effect (schematic above, left).

Any commercial or MIL Spec finish. Dolly optional.

PANEL MOUNTING BLOWERS

COOL your INSTRUMENTS to your EXACT NEEDS

MIL SPEC QUALITY
COMPACT SIZE
YOUR CHOICE OF 8 DIFFERENT STANDARD MODELS (others 'TO ORDER')

LARGE COOLING CAPACITY

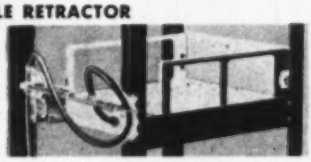
- 600—1200 CFM output
- Mount as standard 8¾" EIA panel, 15" front-to-back
- Meet MIL-I-16910A radio interference requirements
- Air discharge areas to suit innumerable applications
- Cleanable filter.

REFRIGERATED BLOWERS

- Automatically maintain pre-set cabinet temperature
- Mount as standard 19" rack panels
- Control dust and humidity
- Interference-free
- MIL Spec.

These panel mounting refrigeration units, 14" and 21" high, 22¼" deep, discharge cooled air to distribution plenum, re-circulate it to reduce humidity while cooling.

CABLE RETRACTOR

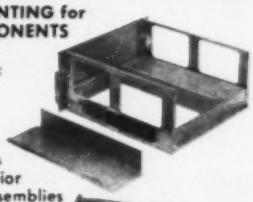


- You service chassis and return to position without snagging components below
- Double action maintains correct tension and cable suspension—permits ample cable to fully extend and tilt chassis
- Adaptable to all types of chassis or drawer slides, varying chassis lengths
- Mounts on rear support rail on standard 1¾" spacing.

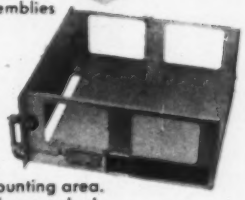
UNIVERSAL CHASSIS

RIGID MOUNTING for your COMPONENTS

TWO TYPES:



MODULAR
2 or more sub chassis
Permits superior cooling of assemblies



SINGLE PANEL FLAT CHASSIS
Unrestricted front panel mounting area. Readily drilled or punched

- Maximum-height side frames have Heli-arc welded corners—give rigid equipment-protection in any position
- Steel or aluminum—⅛" or ¾6" front panels, .062" side frames
- All parts drilled for assembly
- Panel drilled for handles, chassis drilled for slide mounting ('Chassis-Trak') if desired
- Customer may specify all dimensions, materials, finish
- Top, bottom covers available.

HANDLES

Features offered individually or in combination: completely recessed stainless steel single or double latch types, blank handles, push-button panel locks, trigger for tilt lock, positive screw-down clamp type for extreme shock or vibration.

PHONE or WRITE for COMPLETE DATA

ONE SOURCE... for VENTILATED RELAY RACK CABINETS, CONTROL CONSOLES, BLOWERS, CHASSIS, CHASSIS-TRAK®, RELATED COMPONENTS

CIRCLE 291 ON READER-SERVICE CARD

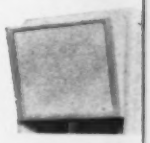
CONVENIENT, MODULAR ACCESSORY EQUIPMENT

- Mount at any desired height on standard-tapped mounting rails
- Standard construction spot-welded CRS (or aluminum for 4 top units)
- Standard finish gray hammertone baked enamel—MIL or other available
- Writing surfaces steel, Formica or aluminum
- Easily installed.

SLOPE FRONT CONSOLE FRONT

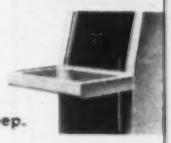
Converts rack cabinet into console. Slope front heights and writing surface depths: 12¼", 14", 17½".

TURRET FRONT



Slope front height: 8¾" to 15¾" in 1¾" increments. Slopes 15° or 30°.

RIGID, FLAT CONSOLE WRITING SURFACE



Requires only 3½" of valuable panel space. 15¾" or 18¾" deep.

DESK TOP CONSOLE

Mount on desk, cabinet, counter. Panel space 12¼" or 17½" high. Base 12¼" or 15¾" deep.

Standard width of above units is 21⅞"—available in 2, 3 or more section widths. Slope fronts angled 15° from vertical.

RACK MOUNTING DRAWERS

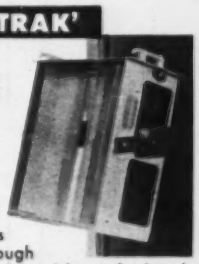
Standard 19" panel—multiples of 1¾" high. 10"—24" deep. Nylon rollers.

RETRACTABLE WRITING SURFACE

Uses only 1¾" valuable panel space—install one or more in cabinet. For 19", 24" or 30" racks. 16"—36" deep.

'CHASSIS-TRAK'

The IDEAL SLIDE for READY ACCESS to ENTIRE CHASSIS



- Ultra thin—mount 17" chassis in 17¾" opening
- Extra strong
- 'Basic' model tilts 120° above horizontal
- 'Detent' model offers 7 locked positions through 210°
- Finger touch releases chassis for bench work
- 10"—24" long
- Double extension
- Finish approved for Military installations

Roller Types Available

ORegon 8-7827

WESTERN DEVICES, INC.
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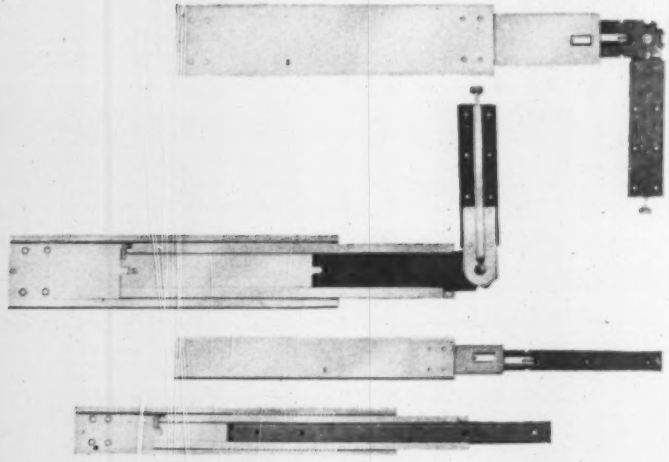
this can't happen when you use BUD CHASSIS SLIDES

This man obviously doesn't have Bud Chassis Slides in his rack. Besides losing his temper he is certainly damaging the delicate components because his slides don't operate smoothly. If you want slides that perform properly under all conditions, be sure to specify BUD Chassis Slides.



There are two types of Bud Slides. The "SI" line is for industrial or military purposes where exceptional use requirements or adherence to MIL specifications are necessary. And the "SC" line designed for commercial applications. Each is available in three types and three sizes to fit standard relay rack. All are of exceptional quality and workmanship with features that make them exceptionally versatile.

See the BUD Chassis Slides at your authorized Bud Distributor or write for Bulletin S-6060.

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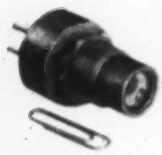
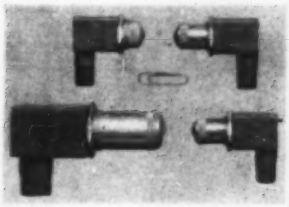
Automation Components

MINIATURE PHOTOELECTRIC SCANNER



Proximity sensor Type SA-1R contains light-source, photocell, and an infrared filter, all in a small anodized-aluminum housing with standard four-prong connector. The solid-state photocell is sensitive, sturdy, and sealed for protection against moisture, dust, or corrosive atmospheres. This scanner operates on reflected light, is responsive to metallic and non-metallic objects. Two models available. Write for Bulletin 260-A.

Type	Max. Sensing	Lamp rating
SA-1R	up to 2 inches	5 v. a-c 60,000 hrs.
SA-1RM	up to 6 inches	2 v. a-c 5,000 hrs.



Short-range scanner SA-1 and medium-range scanner SA-1M consist of two units, the light source and the photocell unit. These small-size scanners have adjustable focus of light-beam for high-precision scanning of rapidly moving parts, with beam-interruption by 1/32" objects. Eyeshade and infrared filter available to increase range and effectiveness. Write for Bulletin 659.

Type	Max. Sensing	Lamp rating
SA-1	up to 4 feet*)	6 v. a-c 5,000 hrs.
SA-1M	up to 12 feet*)	5 v. a-c 5,000 hrs.

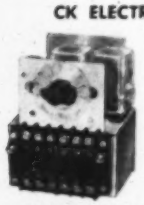
*) can be increased 50% by using eyeshade and infrared filter.

PHOTOELECTRIC RELAYS

Type PE3 — General-purpose relay
Type PE4 — High-speed-impulse relay
Type PE5 — Time-delay relay
Type PE7 — Photo-electric timer

For use with photoelectric scanners; provide suitable light-source voltages; DPDT load contacts handle 8 amperes (non-inductive) at 115 volts a-c.

CK ELECTRONIC TIMERS



Model 120 General-Purpose timer features cold-cathode tube and identical plastic-enclosed plug-in relays, has seven basic modes of operation, including repeat-cycle timing. (Size 4⅞" x 3¾" x 3½".) For information on timers write for Bulletin 120.

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Rotating camshaft actuates distributor-type switches. Single and double-circuit models available. Write for Bulletin "Rototimer".

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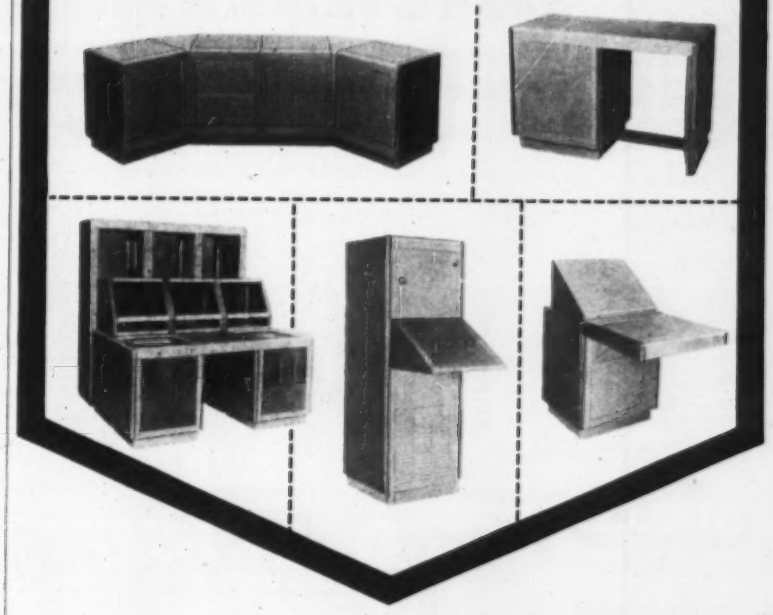

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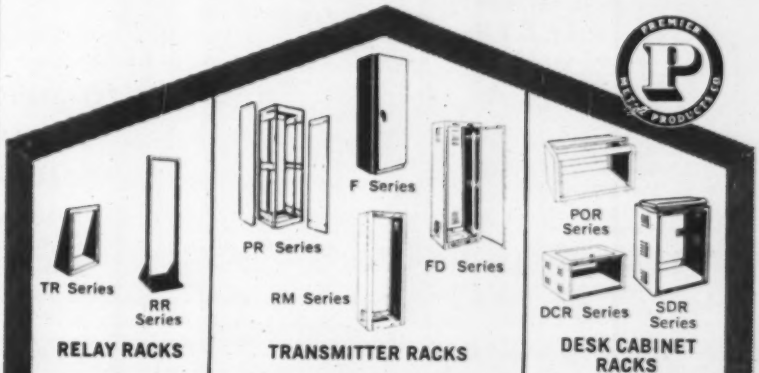

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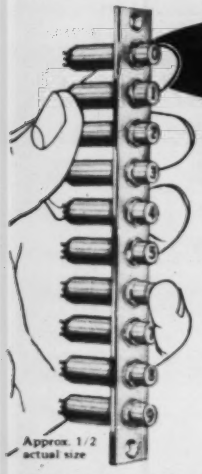

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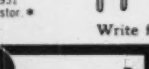

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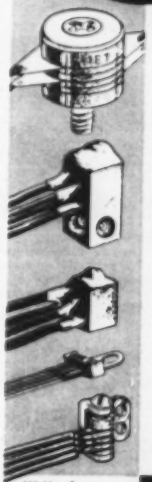

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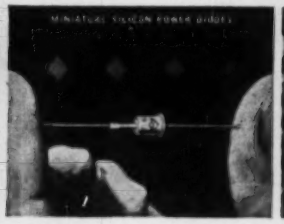

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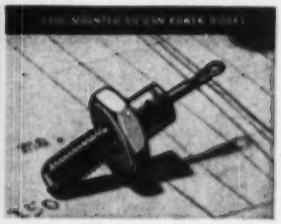

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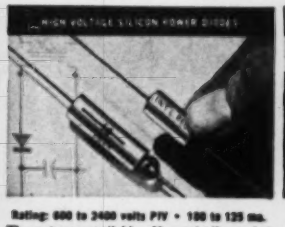

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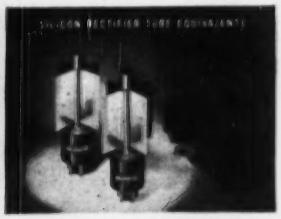

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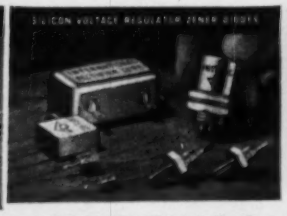

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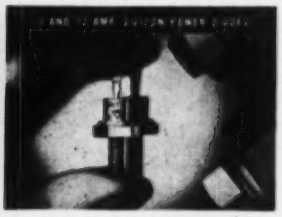

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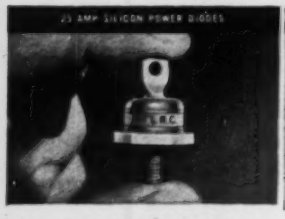

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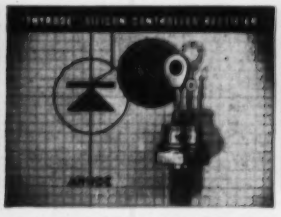

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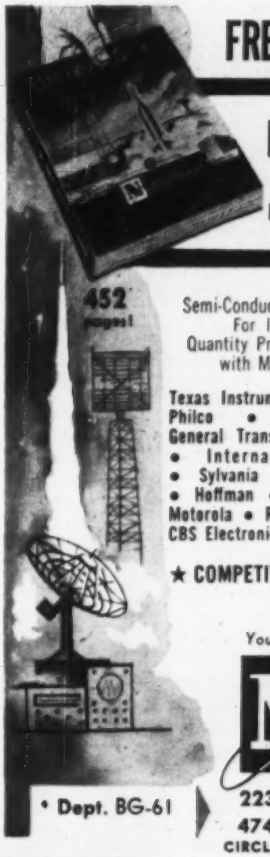

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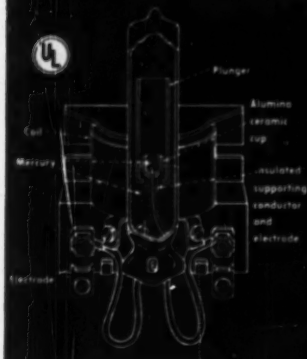

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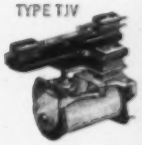

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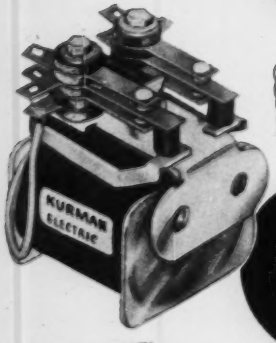
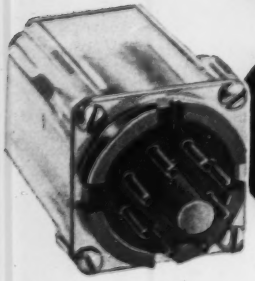


SERIES 52C 54C



SERIES 5D2C 5D3C with polystyrene cover

NEW MULTIPOLE KURMAN PLATE RELAYS

THREE ADJUSTMENTS AVAILABLE (Per Pole)
25 MW • 50 MW • "OFF THE SHELF" 100 MW

COIL RESISTANCE up to 20,000 OHMS
5 AMP CONTACTS • SMALL and LIGHTWEIGHT
AVAILABLE HERMETICALLY SEALED

SEND FOR COMPLETE SPECIFICATIONS

KURMAN ELECTRIC CO.
Subsidiary of Crescent Petroleum Corp. • Quality Relays Since 1928
191 NEWEL STREET, BROOKLYN 22, N. Y.
Export: 135 Liberty Street, New York City Cable: TRILRUSH

KURMAN

CIRCLE 306 ON READER-SERVICE CARD

SPECIAL AND STANDARD

POLLAK

RELAYS, SOLENOIDS & SWITCHES

Whether your application demands a special or standard design, our engineering experience and production facilities are geared to meet your demands.

Write for Technical Bulletin EM.

Printed Circuit Short Frame Telephone Type D-C Relay, RL-1500 Series — exceptionally small size and long life.

Size: 3/32"x1 3/32"x 1 3/16"

High Voltage Switching Relay, RL-904 Series, Bu-ships rated Discharge Switch.

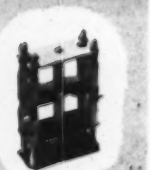
Size: 4 1/16"x6 1/16"x4 11/32"

A-C Power Relay, RL-1200 Series, for Long Life, Industrial Control Applications up to 30 amperes.

Size: 2 3/16"x2 3/16"x 2 3/16"

D-C Miniature Solenoid, SO-2100 Series, High magnetic efficiency for improved power-to-size ratio.

Size: 1 3/16"x 15/32"x 3/4"



High Voltage Switching Relay, RL-906 Series, for Radar, Sonar and Missiles applications.

Size: 3 1/16"x4 1/16"x 1 1/16"

Since 1909

JOSEPH POLLAK CORP.

75-95 Freeport Street

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JP

CIRCLE 308 ON READER-SERVICE CARD

Kurman Electric Co
Leach Corporation
Mack Electric Devices
Magnecraft Electric
McIlvaine O T
Oritron Corp
Philadelphia Scien Glass
Pollak Corp Jos
Potter & Brumfield
Price Electric Corp
R-B-M Controls Div
Relay Sales Inc
Square D Co
Struthers-Dunn
Universal Relay
Ward Leonard Electric
Wheelock Signals Inc
Zenith Electric Co

RELAYS, Hermetically Sealed

Adams & Westlake
Aemco Inc
Allied Control Co
Artisan Electronics
Astronics Div
Automatic Electric
Automatic Timing & Contls
Automation Controls Corp
Barber-Colman
Biddle Co James G
Branson Corp
Bristol Co
Clare & Co C P
Comar Electric
Control Dynamics Corp
Cramer Controls Corp
Curtiss-Wright
Cutler-Hammer
Daystrom-Weston
Ebert Electronics
Edison Industries T A
Electric Regulator
Electronic Computer Co
Elgin Natl Watch Elx Div
Energy Kontrols
Essex Wire Corp
Filtors Inc
G-V Controls
General Automatic
GE Apparatus Sales Div
GE Specialty Control
Giannini Controls Corp
Globe Electrical
Goat Co Inc Fred
Gulton Industries
H-B Instrument
Hart Mfg Co
Hartman Electrical Mfg
Hayden Co A W
Hillburn Electronic
Hi-Spec Electronics
Hufco Industries
Hughes Products
Isotelex Systems Inc
Iron Fireman Elx Div
James Vibrapower Co
Kurman Electric Co
Leach Corporation
Leland Inc G H
Magnecraft Electric
Mallory & Co P R
McIlvaine O T
Mercoid Corp
Metals & Controls Div
M-H Marion Instr Div
Naylor Labs E V
Networks Elx Corp
North Electric Co
Ohmite Mfg Co
Opad Electric Co
Oritron Corp
Philadelphia Scien Glass
Phillips Control Corp
Pollak Corp Jos
Potter & Brumfield
Price Electric Corp
R-B-M Controls Div
Relay Sales Inc
Relay Service Co
Revere Corp of Amer
Rixon Electronics
Sigma Instruments
Stevens-Arnold
Struthers-Dunn
Thermal Controls Inc
Union Switch & Signal
Universal Relay
Wheelock Signals Inc

RELAYS, Instrument Controlled

Adams & Westlake
Allied Control Co
Astronics Div
Automatic Electric
Automatic Switch Co
Automatic Timing & Contls
Automation Controls Corp
B W Controller
Brach Mfg Corp
Branson Corp
Bristol Co
Clare & Co C P
Control Dynamics Corp
Daystrom/Weston
Durakool Inc
Ebert Electronics
Edison Industries T A
Electric Regulator
Electro-Autosizing
Federal Pacific
General Automatic
GE Apparatus Sales Div
General Railway Signal
Gulton Industries
Hillburn Electronic
James Vibrapower Co
Kurman Electric Co
Larson Instrument
Magnecraft Electric
Mercoid Corp
Millivac Instr Div
M-H Industrial Controls
North Electric Co
Opad Electric Co
Oritron Corp
Philadelphia Scien Glass
Phillips Control Corp
Pollak Corp Jos
Potter & Brumfield
Powers Regulator
Price Electric Corp
Relay Sales Inc
Relay Service Co
Republic Flow Meters
Research Industrial Lab
Sensitive Research Instr
Simpson Electric
Stevens-Arnold
Struthers-Dunn
Universal Relay
Victory Engrg Corp
Ward Leonard Electric
Westinghouse Electric
Wheelco Instruments Div

RELAYS, Mercury (see also Switches, Mercury)

Adams & Westlake
Allied Control Co
Automatic Electric
Berneo Engrg
Corona Engrg Service
Ebert Electronics
Energy Kontrols
Gordon Corp
H-B Instrument
Kellogg Switchboard
Mack Electric Devices
McIlvaine O T
Mercoid Corp
Mercury Contacts
M-H Industrial Controls
Philadelphia Scien Glass
Relay Sales Inc
Struthers-Dunn
Universal Relay

RELAYS, Mercury Tube

Adams & Westlake
Berneo Engrg Corp
Durakool Inc
Ebert Electronics
Gordon Corp
H-B Instrument
Mack Electric Devices
Mercoid Corp
M-H Industrial Controls
Philadelphia Scien Glass
Relay Sales Inc
Struthers-Dunn
Universal Relay

RELAYS, Motor Driven, Time Delay

Abrams Instrument
Aemco Inc
Alna Corp
Allen-Bradley
Amglo Corp
Automatic Control Co
Bradleyford & Co
Cramer Controls
Curtiss-Wright
Cutler-Hammer
Eagle Signal
Ebert Electronics
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
General Railway Signal
Hagen Mfg Co
Hamilton Watch Co
Hayden Co A W
Industrial Timer Corp
Kurman Electric Co
Land-Air Inc
Leach Relay Div
M-H Industrial Controls
North Electric Co
Price Electric Corp
Relay Sales Inc
Scientific Industries
Struthers-Dunn
Universal Relay
Westinghouse Electric
Zenith Electric Co

RELAYS, Movable Coil AC

Daystrom/Weston
Federal Pacific
Hillburn Electronic
Kurman Electric Co
North Electric Co
Oritron Corp
Relay Sales Inc
Struthers-Dunn
Universal Relay
Wheelock Signals Inc

RELAYS, Overload

Adams & Westlake
Aemco Inc
Allen-Bradley
Allied Control Co
Allis-Chalmers
Amer Kloeckner-Moeller
Artisan Electronics
Assembly Products Inc
Automatic Switch Co
B W Controller
Branson Corp
Clare & Co C P
Clark Controller
Comar Electric
Control Dynamics Corp
Cutler-Hammer
E-T-A Products
Ebert Electronics
Electric Regulator
Elgin Natl Watch Elx Div

SAVE TIME and EXPENSE on PURCHASING RELAYS

IMMEDIATE DELIVERY

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FREQUENCY RESONANT
POWER TYPES
HERMETICALLY SEALED TYPES
IMPULSE TYPES
MERCURY WETTED CONTACT TYPES
LELAND ROTARIES
CONTACTORS
SOLENOIDS
AN TYPES
CHOPPERS
DELAY
CRYSTAL CAN
SUB-MINIATURE

DELIVERY WITHIN 1 WEEK

Items requiring assembly and/or adjustment

SENSITROLS
A-C TYPES
STEPPERS
TELEPHONE TYPES
MINIATURE TYPES
PLATE CIRCUIT TYPES
POLARIZED TYPES
OVERLOAD
MINOR SWITCHES
AIRCRAFT TYPES
HIGH VOLTAGE TYPES

WE DELIVER RELAYS NOT PROMISES

PRODUCTION QUANTITIES IN STOCK
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Universal RELAY CORP.

42 WHITE ST., NEW YORK 13, N. Y. • WAlker 5-9257

CIRCLE 309 ON READER-SERVICE CARD

BAILEY
MINI-LINE
MANUAL LOADER

• Provides an operator with manual control of remote pneumatic power units. Includes single or duplex indications on a single scale. Uses sensitive, high-capacity, hand-operated air relay.

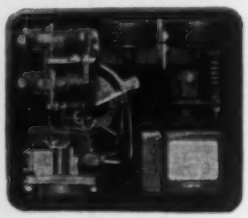
Standard loaders available for the following operations: Set Point (indicates loading and monitor); Bias (indicates loading and biased loading); and Basic (indicates loading only).

Vibration and shock proof construction makes the Bailey **MINI-LINE** Manual Loader suitable for marine, mobile, and other severe operating service.

Request Product Specification P99-2.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd · Montreal, Canada

CIRCLE 310 ON READER-SERVICE CARD



BAILEY
COMPUTING RELAY

• Receives pneumatic signals from transmitters, controllers, and/or relays and produces a control signal according to the computing or control action desired.

As a computer it can multiply, divide, reverse, subtract, average, or totalize pneumatic signals.

As a controller it provides the following control actions: Proportional; Proportional plus Reset; Proportional plus Rate; Proportional plus Reset plus Rate; and Floating (Reset only).

Request Product Specification P99-3.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd · Montreal, Canada

CIRCLE 311 ON READER-SERVICE CARD

Essex Wire Corp
Filtors Inc
G-V Controls
General Automatic
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
General Railway Signal
Hartman Electrical Mfg
Hughes Products
Jennings Radio Mfg
Kurman Electric Co
Larson Instrument
Leach Relay Div
Magnecraft Electric
Metals & Controls Div
Naybor Labs E V
North Electric Co
Ohmite Mfg Co
Opad Electric
Ovitron Corp
Parko Electronics
Pollak Corp Jos
Potter & Brumfield
Price Electric Corp
R-B-M Controls Div
Relay Sales Inc
Sigma Instruments
Square D Co
Struthers-Dunn
Texas Instruments Inc
Tipptronic Inc
US Relay Electronics
Universal Relay
Ward Leonard Electric
WE-Gen Purpose Control
Wheelock Signals Inc

RELAYS, Permanent-Magnet Movable Coil (D'Arsonval Type)

Allen-Bradley
Assembly Products Inc
Automatic Switch Co
Daystrom/Weston
Essex Wire Corp
Federal Pacific
Kurman Electric Co
Larson Instrument
M-H Marion Instr Div
North Electric Co
Sensitive Research Instr
Triplett Electl Instr
Universal Relay

RELAYS, Photoelectric

Allied Radio
Autron Inc
Berkeley Dynamics
Clark Controller
Comar Electric
Cramer Controls Corp
Daystrom/Weston
Dmeter Mfg
Edison Industries T A
Electronic Control
Energy Kontrols
GE Apparatus Sales Div
GE Specialty Control
Kurman Electric Co
Machinery Electrification
McElvaine O T
Med-Tronics Mfg Co
Photobell Co
Photomation Inc
Pollak Corp Jos
Potter & Brumfield
R-B-M Controls Div
Relay Service Co
Sigma Instruments
Tri-Tronics Co
Victory Engrg Corp
Warner Electronic Devices

RELAYS, Pneumatic

Amot Controls Corp
Bailey Meter Co
Bernco Engrg Corp
Black Sivalls & Bryson
Conoflow
Cutler-Hammer
Eagle Signal
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
General Regulator
Hagan Chem & Controls
M-H Industrial Controls
Moore Products Co
North Electric Co
Powers Regulator
Republic Flow Meters
Research Controls
Square D Co
Taylor Instrument
Universal Relay
Westinghouse Air Brake

RELAYS, Polarized

Allied Control Co
Automatic Electric
Barber-Colman
Branson Corp
Bristol Co
Clare & Co C P
Clark Controller
Edison Industries T A
Electric Regulator
Elgin Natl Watch Elx Div
GE Apparatus Sales Div
GE Specialty Control
General Railway Signal
Hart Mfg Co
Hartman Electrical Mfg
Hillburn Electronic
James Vibrapower Co
Kurman Electric Co
Larson Instrument
Leach Corporation
North Electric Co
Potter & Brumfield
Price Electric Corp
Relay Sales Inc
Sigma Instruments
Stevens-Arnold
Torwico Electronics
US Relay Electronics
Universal Relay
Wheelock Signals Inc

RELAYS, Power

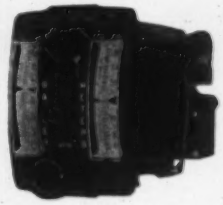
Acro Division
Asmco Inc
Allied Control Co
Artisan Electronics
Automatic Electric
Automatic Switch Co
Automation Controls Corp
Branson Corp
Clare & Co C P
Clark Controller
Comar Electric
Cutler-Hammer
Durakool Inc
Ebert Electronics
Electric Regulator
Energy Kontrols
Elgin Natl Watch Elx Div
Essex Wire Corp
Filtors Inc
GE Apparatus Sales Div
Globe Electrical
Hart Mfg Co
Hartman Electrical Mfg
Hillburn Electronic
Hi-Spec Electronics
James Vibrapower Co
Jennings Radio Mfg
Land-Air Inc
Leach Corporation
Kurman Electric Co
Mack Electric Devices
Magnecraft Electric
McElvaine O T
Molex Products
Naybor Labs E V
North Electric Co
Ohmite Mfg Co
Ovitron Corp
Phillips Control Corp
Pollak Corp Jos
Potter & Brumfield
Price Electric Corp
R-B-M Controls Div
Relay Sales Inc
Sigma Instruments
Square D Co
Struthers-Dunn
Unit Process Assemblies
US Relay Electronics
Universal Relay
Victory Engrg Corp
Warren Industries
Ward Leonard Electric
Welch Electric
Wheelock Signals Inc
Zenith Electric Co

RELAYS, Sensitive

Adams & Westlake
Allied Control Co
Assembly Products Inc
Automatic Electric
Automatic Switch Co
Automation Controls Corp
Barber-Colman
Base Inc
Bristol Co
Comar Electric
Control Dynamics Corp
Corbett Science Labs
Cutler-Hammer
Daystrom/Weston
Ebert Electronics
Edison Industries T A
Electric Regulator
Electrold Corp
Elgin Natl Watch Elx Div
Federal Pacific
General Automatic
GE Apparatus Sales Div
GE Specialty Control
General Railway Signal
Globe Electrical
Goat Co Inc Fred
H-B Instrument
Hart Mfg Co
Hartman Electrical Mfg
Hillburn Electronic
Hi-Spec Electronics
Hughes Products
Iron Fireman Elx Div
Jaidinger Mfg
Kurman Electric Co
Larson Instrument
Leach Corporation
Mack Electric Devices
Magnecraft Electric
Magnetic Devices Inc
Med-Tronics Mfg Co
M-H Industrial Controls
Molex Products
Naybor Labs E V
North Electric Co
Ohmite Mfg Co
Opad Electric
Parko Electronics Co
Phaostron Instr & Elx
Philadelphia Selen Glass
Phillips Control Corp
Pollak Corp Jos
Potter & Brumfield
Precision Thermometer
Price Electric Corp
Reisner Mfg Co W H
Relay Sales Inc
Relay Service Co
Research Industrial Lab
Sensitive Research Instr
Servo-Tek Products
Sigma Instruments
Simpson Electric
Struthers-Dunn
Torwico Electronics
Union Switch & Signal
US Relay Electronics
Universal Relay
Varo Mfg Co
Victory Engrg Corp
Ward Leonard Electric
Warrick Co Chas F
Wheelock Signals Inc

RELAYS, Stepping

Artisan Electronics
Astromics Div
Automatic Electric
Clare & Co C P



BAILEY
MINI-LINE
SELECTOR STATION

• Provides all necessary indications and controls for "bumpless" transfer and for complete automatic or hand operation of a pneumatic control system. Used as a combustion trend indicator, hand-auto selector, and set point or biasing adjuster.

May include as many as four indications of vital control system signals. Vibration and shock proof construction makes the Bailey MINI-LINE Selector Station suitable for marine, mobile, and other severe operating service.

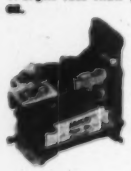
Request Product Specification P99-1.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O
Bailey Meter Company Ltd · Montreal, Canada

CIRCLE 312 ON READER-SERVICE CARD

Specify JAICO RELAYS for PRECISION, QUALITY PERFORMANCE

The MR—Our Miniature relay where space and weight are at a premium. Weighs less than ½ oz.



The QR—Our Precision Relay for Aircraft Instrumentation, etc.

The MD—Our General Purpose Relay for Vending Machines, Automatic Pinsetters, etc.

JAICO PRODUCTS
JAIDINGER Mfg. Co. Inc.
1916 W. HUBBARD STREET
CHICAGO 22, ILLINOIS
PHONE HA 1-1090

CIRCLE 313 ON READER-SERVICE CARD

Comar Electric
Corbett Science Labs
Cunningham Son & Co
GE Apparatus Sales Div
General Controls Co
General Railway Signal
Haydon Co A W
Hillburn Electronic
Intelex Systems Inc
Kellogg Switchboard
Leach Relay Div
Leland Inc G H
Land-Air Inc
Mercoid Corp
North Electric Co
Potter & Brumfield
Price Electric Corp
Relay Sales Inc
Sigma Instruments
Stromberg-Carlson Co
Struthers-Dunn
US Relay Electronics
Universal Relay

RELAYS, Subminiature

Aemco Inc
Aero Electronics
Allied Control Co
Amercray Corp
Automation Controls Corp
Baso Inc
Branson Corp
Clare & Co C P
Comar Electric
Control Dynamics Corp
Curtiss-Wright
Elgin Natl Watch Elx Div
Filtors Inc
GE Apparatus Sales Div
GE Specialty Control
Giannini Controls Corp
Gulton Industries
Hart Mfg Co
Hillburn Electronic
Hufco Industries
Hughes Products
Intelex Systems Inc
Iron Fireman Elx Div
Jaidinger Mfg
Kurman Electric Co
Leach Corporation
Magnecraft Electric
Naybor Labs E V
North Electric Co
Parko Electronics Co
Philadelphia Scien Glass
Phillips Control Corp
Potter & Brumfield
Price Electric Corp
Relay Sales Inc
Sigma Instruments
Struthers-Dunn
Thermal Controls Inc
Union Switch & Signal
US Relay Electronics
Universal Relay
Victory Engrg Corp
Wheelock Signals Inc

RELAYS, Telephone, Auxiliary Ringing

Allied Control Co
Automatic Electric
Automation Controls Corp
Clare & Co C P
Comar Electric
General Automatic
GE Apparatus Sales Div
Globe Electrical
Goat Co Inc Fred
Hillburn Electronic
Hufco Industries
Kellogg Switchboard
Kurman Electric Co
North Electric Co
Leach Relay Div
Magnecraft Electric
Ohmite Mfg Co
Phillips Control Corp
Potter & Brumfield
R-B-M Controls Div
Relay Sales Inc
Stromberg-Carlson Co
Struthers-Dunn
US Instrument Corp
US Relay Electronics
Universal Relay
Wheelock Signals Inc

RELAYS, Temperature

Baso Inc
Blonder-Tongue Labs
Blue M Electric
Electric Regulator
E-T-A Products
General Automatic
GE Apparatus Sales Div
Hughes Products
Kurman Electric Co
Larson Instrument
Lewis Engrg Co
Magnecraft Electric
M-H Industrial Controls
Philadelphia Scien Glass
Pollak Corp Jos
Powers Regulator
Precision Thermometer
Sigma Instruments
Universal Relay
Victory Engrg Corp

RELAYS, Temperature-compensated

Baso Inc
Branson Corp
Curtiss-Wright
Edison Industries T A
Electric Regulator
G-V Controls
General Automatic
GE Apparatus Sales Div
General Controls Co
General Railway Signal
Globe Electrical
Hartman Electrical Mfg
Leach Relay Div
Pollak Corp Jos
Sigma Instruments
Thermal Controls Inc
Torwico Electronics
US Relay Electronics
Victory Engrg Corp

RELAYS, Time Delay

Abrams Instrument
Adams & Westlake
A'G'A' Division
Alina Corp
Allied Control Co
Alto Scientific
Amperite Co
Analex Instruments Inc
Automatic Control Co
Automatic Electric
Automatic Switch Co
Automatic Timing & Contls
Automation Controls Corp
Baso Inc
Branson Corp
Clare & Co C P
Clark Controller
Comar Electric
Cramer Controls
Curtiss-Wright
Cutler-Hammer
Dmeter Mfg
Durakool Inc
E-T-A Products
Eagle Signal
Ebert Electronics
Edison Industries T A
Elgin Natl Watch Elx Div
Energy Controls
Farmer Electric
G-V Controls
General Automatic
General Controls
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
GE Missile & Space
GE Specialty Control
General Railway Signal
Globe Electrical
Goat Co Inc Fred
Hagen Mfg Co
Hamilton Watch Co
Hartman Electrical Mfg
Haydon Co A W
Haydon Co A W (Calif)
Hughes Products
Industrial Timer Corp
Jaidinger Mfg
Kurman Electric Co
Larson Instrument
Leach Corporation
Machinery Electrification
Magnecraft Electric
Mallory & Co P R
Master Specialties
McElvaine O T
M-H Industrial Controls
Natel Engrg Co
Naybor Labs E V
North Electric Co
Ohmite Mfg Co
Parko Electronics Co
Phillips Control Corp
Pollak Corp Jos
Price Electric Corp
R-B-M Controls Div
Relay Sales Inc
Rhodes Inc M H
Square D Co
Struthers-Dunn
Tempo Instrument
Thermal Controls Inc
Tippitronic Inc
Torwico Electronics
United Control Corp
US Instrument Corp
US Relay Electronics
Universal Relay
Victory Engrg Corp
Vol-Shaw Electronics
Waugh Engrg Co
WE-Director Systems
Westinghouse Electric
Wheelock Signals Inc
Wilson & Co G C
Zenith Electric Co

RELAYS, Transformer, Low Voltage

Automatic Timing & Contls
B-W Controllers
Ebert Electronics
G-V Controls
General Controls
Gulton Industries
Kurman Electric Co
Mercoid Corp
North Electric Co
Struthers-Dunn
Warrick Co Chas F

RELAYS, Vacuum Contact

Allied Control Co
Ebert Electronics
Eitel-McCullough
GE Apparatus Sales Div
Jennings Radio Mfg
Mack Electric Devices
Philadelphia Scien Glass
Struthers-Dunn
Universal Relay

RELAYS, Vibrating Reed Type

Automatic Electric
Biddle Co James G
Baleva Research
Clare & Co C P
Collins Electronics
Electronic Computer Co
Jaidinger Mfg
North Electric Co
Stevens-Arnold
Universal Relay
Wurlitzer Co

RESISTORS, Adjustable

Allen-Bradley
Atohm Electronics
Bourns Inc
CTS Corporation
Carter Parts Co
Centralab Div
Clark Controller
Clarostat Mfg
Con-Elco
Continental-Wirt
Electric Regulator
Electromath Corp
General Radio
Handley Inc
International Resistance
Mallory & Co P R
Ohmite Mfg Co
Precision Inc
Precision Line Inc
Resistors Inc
Rex Rheostat
Servonic Instruments
Tru-Ohm Products
Tech-Ohm Resistor
Ward Leonard Electric

RESISTORS, Ballast

Clarostat Mfg
Ohio Carbon Co
Precision Resistor Co
Tru-Ohm Products
Tech-Ohm Resistor

RESISTORS, Carbon Composition and/or Variable

Aero Electronics
Aerovox Corp
Allen-Bradley
Bourns Inc
CTS Corporation
Carter Parts Co
Centralab Div
Clarostat Mfg
Computer Instruments
Con-Elco
Daystrom/Mil Elx
Electromath Corp
Erie Resistor
International Resistance
Mallory & Co P R
Ohio Carbon Co
Ohmite Mfg Co
Reon Resistor Corp
Stackpole Carbon
Sterling Precision
Technology Instr (Mass)
Tech-Ohm Resistor
White Dental Mfg

RESISTORS, Deposited Carbon

Aerovox Corp
Amperite Co
Bourns Inc
Centralab Div
Clarostat Mfg
Continental-Wirt
Corning Glass
Electra Mfg
Erie Resistor
International Resistance
Mallory & Co P R
Mepco Inc
Optical Coating Lab
Phaostron Instr & Elx
Technology Instr (Mass)
Tech-Ohm Resistor
Texas Instruments Inc
Victoreen Instr Co
Wilrite Products

RESISTORS, Encapsulated

Aerovox Corp
Allen-Bradley
Atohm Electronics
Bourns Inc
Centralab Div
Clarostat Mfg
Corning Glass
Daven Co
Daystrom/Weston
Decon Corp
Dmeter Mfg
Electra Mfg
Electro Instruments
Erie Resistor
General Resistance
Gordos Corp
International Resistance
Julie Research Labs
Kelvin Electric
Mallory & Co P R
Mepco Inc
Non-Linear Systems
Ohmite Mfg Co
Precision Inc
Precision Resistor Co
Reon Resistor Corp
Resistance Prods Co
Shallcross Mfg Co
Technology Instr (Mass)
Tech-Ohm Resistor
Texas Instruments Inc
Ultronix Inc

RESISTORS, High Frequency

Aerovox Corp
Atohm Electronics
Clarostat Mfg
Continental-Wirt
Corning Glass
Daystrom/Weston
Electra Mfg
Electromath Corp
Erie Resistor
Filmohm Corp
Halex Inc
International Resistance
Julie Research Labs
Mallory & Co P R
Mepco Inc
Ohmite Mfg Co
Resistance Prods Co
Technology Instr (Calif)
Technology Instr (Mass)
Tech-Ohm Resistor
Transformers Inc

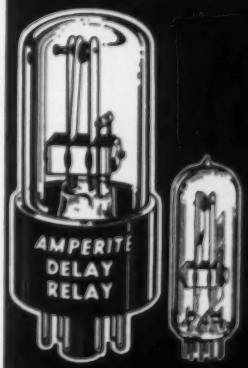
Large production gives you low prices!
– that's why . . .

Over 100 O.E.Ms have standardized on

AMPERITE

Thermostatic DELAY RELAYS

2 to 180 Seconds



Actuated by a heater, they operate on A.C., D.C., or Pulsating Current.

Hermetically sealed. Not affected by altitude, moisture, or climate changes

SPST only—normally open or closed.

Compensated for ambient temperature changes from —55° to + 80° C. Heaters consume approximately 2 W. and may be operated continuously. The units are **rugged, explosion-proof, long-lived,** and—**inexpensive!**

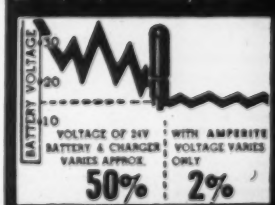
TYPES: Standard Radio Octal, and 9-Pin Miniature . . . **List Price, $4.00.**

Also — **Amperite Differential Relays:** Used for automatic overload, under-voltage or under-current protection

PROBLEM? Send for Bulletin No. TR-81

BALLAST REGULATORS

Amperite Regulators are designed to keep the current in a circuit **automatically regulated** at a definite value (for example, 0.5 amp.) . . . For currents of 60 ma. to 5 amps. Operate on A.C., D.C., or Pulsating Current.



Hermetically sealed, they are not affected by changes in altitude, ambient temperature (—50° to + 70° C.), or humidity . . . Rugged, light, compact, most inexpensive . . . . . **List Price, $3.00.**

Write for 4-page Technical Bulletin No. AB-51

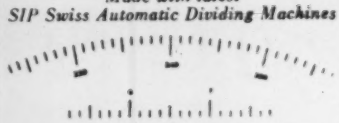
AMPERITE

561 Broadway, New York 12, N. Y. . . . CAnal 6-1446
In Canada: Atlas Radio Corp., Ltd., 50 Wingold Ave., Toronto 10

CIRCLE 314 ON READER-SERVICE CARD

MACHINE-DIVIDED SCALES

Made with latest SIP Swiss Automatic Dividing Machines



LINEAR

Accuracy to ±5 microns (0.0002")

CIRCULAR

Accuracy to ±5 seconds

Any scale pattern—Any line width—Any material

FINE MACHINE ENGRAVING

Scales, Dials, Drums, Rods, Panels

ACCURATELY ETCHED RETICLES

Made in any specified pattern and dimensions

PRECISION MACHINE-RULED MASTERS

For printed circuits, i.e., commutators, switches, and general circuitry

L. C. RENICK CO.

308 So. Salsipuedes St., Santa Barbara, Calif.
formerly Cicero, Illinois

CIRCLE 315 ON READER-SERVICE CARD

SWITCHING SYSTEMS

For Thermocouples or Resistance Bulb Circuits

Rotary Type Switch

T-E's variety of compact, durable switching systems lets you choose the one best suited to your circuit needs.

Rotary Selector Switch "Shorting-type" switches for quick checking or switching of sensing elements. Maximum, 24 points.

Key Switches Will connect many sensing elements to one instrument or transfer them from one instrument to another. Maximum, 144 points.

Push Button Switches Permit on-off checking or averaging of temperatures from many points. Maximum 72 points.

Quick-Coupling Connector Panels Provide great flexibility in transferring large numbers of thermocouples. Unlimited Capacities.

Also a wide selection of quick-coupling plugs and jacks for all thermocouple assemblies.

Write for Bulletin 24-FF

Thermo Electric Co. Inc.
Saddle Brook, New Jersey

In Canada—
Thermo Electric (Canada) Ltd., Brampton, Ont.

CIRCLE 316 ON READER-SERVICE CARD

RESISTORS, High Megohm
Allen-Bradley
Atohm Electronics
Centralab Div
Clarostat Mfg
Corbett Science Labs
Corning Glass
Daven Co
Daystrom/Weston
Electromath Corp
Julie Research Labs
K-F Development
Kelvin Electric
Mepco Inc
Reon Resistor Corp
Resistance Prods Co
Shallcross Mfg Co
Technology Instr (Calif)
Technology Instr (Mass)
Tech-Ohm Resistor
Victoreen Instr Co
White Dental Mfg

RESISTORS, High Voltage
Atohm Electronics
Centralab Div
Clarostat Mfg
Corbett Science Labs
Corning Glass
Daystrom/Weston
Electromath Corp
Erie Resistor
International Resistance
Julie Research Labs
K-F Development
Mallory & Co P R
Mepco Inc
Ohmite Mfg Co
Precision Resistor Co
Ram Meter Inc
Shallcross Mfg Co
Technology Instr (Mass)
Tech-Ohm Resistor
White Dental Mfg

RESISTORS, Manganin
Atohm Electronics
Daven Co
Daystrom/Weston
Dmeter Mfg
General Resistance
Gray Instrument
Julie Research Labs
K-F Development
Kelvin Electric
Mepco Inc
M-H Rubicon Instrs Div
Ohmite Mfg Co
Precision Inc
Precision Resistor Co
Ram Meter Inc
Reon Resistor Corp
Rinco Inc
Technology Instr (Mass)
Tech-Ohm Resistor
Shallcross Mfg Co
Winslow Company Inc

RESISTORS, Molded
Aerovox Corp
Allen-Bradley
Atohm Electronics
Clarostat Mfg
Daven Co
Continental-Wirt
Electra Mfg
General Resistance
International Resistance
Julie Research Labs
K-F Development
Mepco Inc
Ohio Carbon Co
Ohmite Mfg Co
Precision Resistor Co
Technology Instr (Mass)
Tech-Ohm Resistor
White Dental Mfg
Wilrite Products

RESISTORS, Negative Temperature Coefficient
Aerovox Corp
Computer Instruments
Daven Co
Dmeter Mfg
Electra Mfg
Erie Resistor
Fenwal Electronics
GE Magnetic Materials
General Resistance
Kelvin Electric
Mepco Inc
Shallcross Mfg Co
States Company
Tech-Ohm Resistor
Victory Engrg Corp
Wilrite Products

RESISTORS, Noninductive
Aerotox Corp
Allen-Bradley
Atohm Electronics
British Industries
Clarostat Mfg
Computer Instruments
Continental-Wirt
Corning Glass
Daven Co
Daystrom/Weston
Dmeter Mfg
Electra Mfg
Electro Instruments
Filmohm Corp
General Radio
General Resistance
Gray Instrument
International Resistance
Julie Research Labs
K-F Development
Kelvin Electric
Mepco Inc
Ohmite Mfg Co
Precision Inc
Precision Resistor Co
Reon Resistor Corp
Resistors Inc
Rex Rheostat
Rinco Inc
Shallcross Mfg Co
States Company
Technology Instr (Calif)
Tru-Ohm Products
Tech-Ohm Resistor
Ultronix Inc
Ward Leonard Electric

RESISTORS, Precision (accuracy better than 1%)
Aerovox Corp
Allen-Bradley
Atohm Electronics
British Industries
Budd Co Inst Div
CTS Corporation
Continental-Wirt
Corbett Science Labs
Clarostat Mfg
Corning Glass
Daven Co
Daystrom/Weston
Dmeter Mfg
Electra Mfg
Electro Instruments
Electromath Corp
Electro-Measurements
Electro-Mec Lab
Electronic Applications
Erie Resistor
Fenwal Electronics
General Radio
General Resistance
General Transistor
Gray Instrument
International Resistance
Julie Research Labs
K-F Development
Kelvin Electric
Leeds & Northrup
Mepco Inc
M-H Rubicon Instrs Div
Muirhead Instrs Inc
Mallory & Co P R
Networks Elx Corp
Non-Linear Systems
Ohmite Mfg Co
Precision Inc
Precision Line Inc
Precision Resistor Co
Reon Resistor Corp
Resistance Prods Co
Resistron Co
Sage Electronics
Shallcross Mfg Co
Sterling Precision
Technology Instr (Calif)
Technology Instr (Mass)
Tech-Ohm Resistor
Texas Instruments Inc
Transformers Inc
Tru-Ohm Products
Ultronix Inc
Winslow Company Inc

RESISTORS, Tape
Atohm Electronics
Filmohm Corp
International Resistance
K-F Development
Tech-Ohm Resistor

RESISTORS, Wire Wound (2 watts and Under)
Aero Electronics
Aerovox Corp
Atohm Electronics
Carol Electronics
Centralab Div
Clarostat Mfg
Continental-Wirt
Daven Co
Daystrom/Weston
Dmeter Mfg
Electro Instruments
Electromath Corp
Electro-Mec Lab
General Radio
General Resistance
General Transistor
Gray Instrument
Hardwick Hindle
International Resistance
Julie Research Labs
K-F Development
Kelvin Electric
Mallory & Co P R
Mepco Inc
M-H Rubicon Instrs Div
Model Engrg
Muirhead Instrs Inc
Non-Linear Systems
Ohmite Mfg Co
Precision Inc
Precision Line Inc
Precision Resistor Co
Reon Resistor Corp
Resistance Prods Co
Resistron Co
Rinco Inc
Sage Electronics
Shallcross Mfg Co
Sterling Precision
Technology Instr (Calif)
Technology Instr (Mass)
Tru-Ohm Products
Tech-Ohm Resistor
Ultronix Inc

RESISTORS, Wire Wound (2 to 500 watts) (see also Rheostats)
Aero Electronics
Atohm Electronics
Carol Electronics
Clark Controller
Clarostat Mfg
Continental-Wirt
Daystrom/Weston
Dmeter Mfg
Electro-Flex Heat
Electromath Corp
GE Apparatus Sales Div
General Radio
Hardwick Hindle
International Resistance
Kelvin Electric
Mallory & Co P R
Mepco Inc
Microlec Corp
Model Engrg
Ohio Carbon Co
Ohmite Mfg Co
Precision Inc
Ram Meter Inc
Resistors Inc
Rex Rheostat
Sage Electronics
Shallcross Mfg Co
Sterling Precision
Technology Instr (Mass)
Tru-Ohm Products
Tech-Ohm Resistor
Ward Leonard Electric

RESISTORS, Wire Wound (500 to 1500 watts) (see also Rheostats)
Atohm Electronics
Clark Controller
Daystrom/Weston
Electromath Corp
GE Apparatus Sales Div
International Resistance
Mallory & Co P R
Model Engrg
Ohmite Mfg Co
Ram Meter Inc
Resistors Inc
Rex Rheostat
Square D Co
Sterling Precision
Technology Instr (Mass)
Tru-Ohm Products
Tech-Ohm Resistor
Ward Leonard Electric
WE-Gen Purpose Control
Westinghouse Electric

RESISTORS, Woven
Clarostat Mfg
States Company
Tech-Ohm Resistor

RETICLES
Bushnell & Co D P
Gordon Enterprises
Kollsman Instr Corp
Leroy M E Clausing
Model Rectifier
Pulse Optical Co
Photoplating Co
Renick Co L C
Zenith Optical Lab

RHEOSTATS, Field
Clark Controller
Clarostat Mfg
Cutler-Hammer
GE Apparatus Sales Div
Mallory & Co P R
Ohmite Mfg Co
Tru-Ohm Products
Ward Leonard Electric
WE-Gen Purpose Control
Westinghouse Electric

RHEOSTATS, Slide Wire and Variable (see also Resistors)
Aero Electronics
Allen-Bradley
Atohm Electronics
Biddle Co James G
Bourns Inc
CTS Corporation
Carter Parts Co
Clarostat Mfg
Continental-Wirt
DeJur Amsco
General Controls
General Radio
Hardwick Hindle
Howell Instrument Co
Kintronic Div
Mallory & Co P R
Model Rectifier
Ohmite Mfg Co
Precision Line Inc
Rex Rheostat
Rinco Inc
Sarvonic Instruments
Superior Electric Co
Ward Leonard Electric
Westinghouse Electric

SCALES, Instrument
American Laubscher
Bushnell & Co D P
Chatillon John
Croname Inc
Engis Equipment
Exact Weight Scale
Felsenthal & Sons
Gaertner Scientific
Gurley W & L E
Jas Hardware Mfg
Metalphoto Corp
Ohaus Scale Corp
Photoplating Co
Renick Co L C
Thayer Scale Corp
Trimet Scale & Mfg
Trio Laboratories
US Radium Corp
Waldom Electronics

SERVOMOTORS, Electric Motor and/or Solenoid
Airesearch Mfg Co
American Electronics
Amer Meas & Control
Barber-Colman
Beckman/Helipot Div
Bendix Eclipse-Pioneer
Clifton Precision
Dalmotor Div
Diehl Mfg Co
Dynamic Instr Corp
Eastern Air Devices
Edison Industries T A
Electric Indicator
Electro-Autosizing
Ford Instr
Genisco Inc
Haydon Co A W
Hoover Electric Co
Induction Motors Corp
Induction Motors of Calif
Kearfott Div
Land-Air Inc
Librascope Div
Link Div
M-H Industrial Controls
Muirhead Instrs Inc
Oster Mfg John
PSP Engrg Co
Sangamo Electric Co
Servo Systems Co
Servo-Tek Products
Sperry Gyroscope
Summers Gyroscope
Teller Co
Western Gear Corp
Weston Hydraulics Ltd

SOLENOIDS, (see also Relays)
Allen-Bradley
Applied Dynamics
Artisan Electronics
Automatic Electric
Automatic Switch Co
B-W Controllers
Cannon Electric
Carruthers & Fernandes
Comar Electric
Controls Co of Amer
Cunningham Son & Co
Cutler-Hammer
Detroit Coil Co
Electric Autolite
Electrical Windings
Electroid Corp
Essex Wire Corp
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
General Controls
Goat Co Inc Fred
Hamilton Standard Div
Hertz Inc Karl
Induction Motors Corp
Kellogg Switchboard
Kintronic Div
Koontz-Wagner Elec
Land-Air Inc
Leetronics Inc
Merit Coil & Transformer
Midwestern Instrs
Phillips Control Corp
Pollak Corp Jos
PSP Engrg Co
R-B-M Controls Div
Relay Sales Inc
Synchro-Start
US Relay Co
Valcor Engrg Corp
Welch Electric
Wells Electronics
Weston Hydraulics Ltd

SOLENOIDS, Rotary
Amer Meas & Control
Carruthers & Fernandes
Curtiss-Wright
Haydon Co A W
Hoover Electric Co
Land-Air Inc
Leetronics Inc
Leland Inc G H
Naybor Labs E V
North Atlantic Indus
Oak Mfg Co
PSP Engrg Co
Pacsel Div
Relay Sales Inc
Western Gear Corp

SOLENOIDS, Subminiature
Cannon Electric
Carruthers & Fernandes
Comar Electric
Controls Co of Amer
Cunningham Son & Co
Haydon Co A W
Induction Motors Corp
Kintronic Div
Koontz-Wagner Elec
Leetronics Inc
Midwestern Instrs
Naybor Labs E V
Phillips Control Corp
Pollak Corp Jos
PSP Engrg Co
Relay Sales Inc
Valcor Engrg Corp
Wells Electronics

STANDARD CELLS
Eppley Laboratory
Instrulab Inc
International Rectifier
Muirhead Instrs Inc
North Hills Electric
Winslow Company Inc

SWITCHES, Air Operated
Acro Division
Astronics Div
Bertea Engrg
Bristol Co
Carruthers & Fernandes
Century Elx & Instr
Colvin Labs
Computer Instruments
Consol Controls
Custom Comp Switches
Dietz Co Henry G
Electric Regulator

When Using This Guide

look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

• **PRECISION RULINGS** ON GLASS & METAL

• **TIMING DISCS—CIRCUMFERENTIALLY DIVIDED**
FOR COMPUTER MEMORY SYSTEMS

• **EVAPORATION MASKS IN MOLYBDENUM**
FOR MESA TRANSISTOR STRIPES, ETC.

• **MASTER GAUGE SCALES & GRATINGS**
FOR HIGH RESOLUTION MEASURING SYSTEMS, ETC.

• **MICRO-MESH MASTERS**
FOR ELECTROFORMED MESH

• **REGISTRATION GRIDS**
FOR PRINTED CIRCUIT LAYOUT, ETC.

MAX LEVY & CO., INC.—PHILA. 44, PA.

CIRCLE 317 ON READER-SERVICE CARD

ACCURACY OF TEMPERATURE CONTROL DETERMINES ITS QUALITY

ACCURATE control of temperature or pH is vital to modern heat treating or chemical processing, because only in this way can uniform quality be obtained under mass production conditions.

Potentiometers have made such control possible, and "the heart" of these instruments in most cases, for over 25 years, has been the Eplab Standard Cell. This cell is a "yardstick" for the translation of voltage to temperature. The first commercial cell of its type, constant research has made it "as standard as sterling".

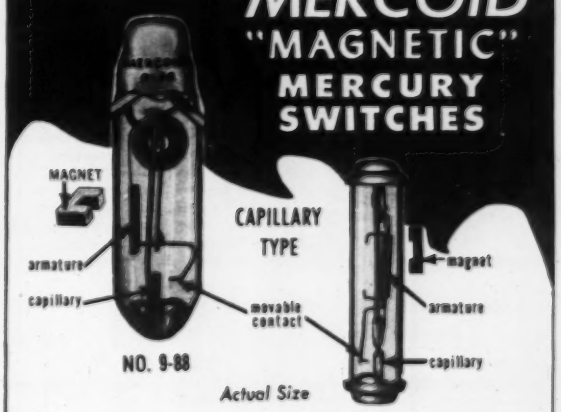
When you buy potentiometers, specify Eplab Standard Cells.

THE EPPLEY LABORATORY, INC.
SCIENTIFIC INSTRUMENTS
3 Sheffield Ave., Newport, R.I., U.S.A.

EPLAB Standard Cells

CIRCLE 318 ON READER-SERVICE CARD

MERCOID
"MAGNETIC"
MERCURY SWITCHES



No. 9-88 (normally open) maximum ampere rating 1 Amp. at 24V., 0.5 Amp. at 115V. Can be mounted on any angle up to 30° from vertical. Provides hundreds of cycles per minute. Available normally closed. Various types of leads available.

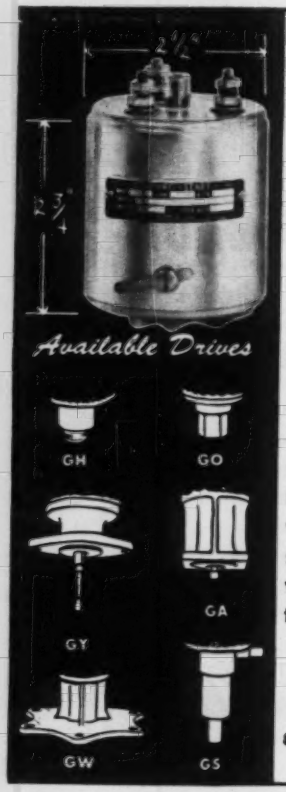
No. 6-81 (normally open) maximum ampere rating 0.9 Amp. at 24V., 0.3 Amp. at 115V. Available normally closed. Has metal end caps. Can be mounted at any angle up to 45° from vertical. Speeds in excess of 400 cycles depending upon load characteristics. Available with or without leads.

Other types of magnetic switches also available (electrical rating up to 5 Amp. at 115V.)

WRITE FOR BULLETIN NO. 50

THE MERCOID CORPORATION
4211 Belmont Ave., Chicago 41, Ill.

CIRCLE 319 ON READER-SERVICE CARD



SYNCHRO-START

SPEED SENSITIVE SWITCHES

Various models containing 1, 2, 3, 4 or more switches are available with drives and mounts suited to the installation. Any drive or mounting shown can be used with any of our speed switches which are best suited for the job, whether it is underspeed, overspeed or varied numbered of trip switches.

SYNCHRO-START PRODUCTS, INC.

8151 N. RIDGEWAY AVE.
SKOKIE, ILLINOIS

CIRCLE 320 ON READER-SERVICE CARD

Ellison Draft Gage
Fairchild Controls
Furnas Electric
General Devices
GE Apparatus Sales Div
Glasco Instr
Gorn Electric
Hayden Switch Inc
Johnson Service Co
Kollsman Instr Corp
Linear Controls
Mercoid Corp
M-H Industrial Controls
Newark Controls
Powers Regulator
Rotary Devices Corp
Servonic Instruments
Square D Co
Westinghouse Electric

SWITCHES, Instrument, including Wiping, Selecting, etc.

Adams-Russell Co Inc
Advanced Technology Labs
Aerovox Corp
Airflyte Electronics
Allis-Chalmers
Amphenol IP DK Div
Amphenol-RF Prods Div
Applied Electronics
Applied Science Corp
Astromics Div
Automatic Electric
Automatic Metal Prods
CTS Corporation
Capitol Machine Co
Carling Electric
Centralab Div
Clare & Co C P
Clarostat Mfg
Cunningham Son & Co
Cutler-Hammer
Daven Co
Digitran Co
Electric Regulator
Electro Development
Electro-Miniatures
Electrosnap
Electro Switch Corp
Federal Pacific
Gamewell Co
General Communication
General Devices
Graphik-Circuits
Grayhill Inc
Hayden Switch Inc
Hickok Electrical Instr
Industrial Devices Inc
Industrial Instrs Inc
Kellogg Switchboard
Land-Air Inc
Leeds & Northrup
Lewis Engrg Co
Mallory & Co P R
M-H Industrial Controls
M-H Micro Switch Div
Model Engrg
Muirhead Instrs Inc
Mycalex Corp of Amer
North Electric Co
Pollak Corp Jos
Poly-Scientific Corp
Relay Sales Inc
Rotary Devices Corp
Shallcross Mfg Co
Switchcraft Inc
Taurus Corp
Thermo Electric
US Instrument Corp
WE-Gen Purpose Control

SWITCHES, Magnetic

Acro Division
Allen-Bradley
Automatic Electric
Automatic Switch Co
Clark Controller
Cutler-Hammer
E-T-A Products
Ebert Electronics
Electrosnap
Furnas Electric
General Devices
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
Gordos Corp
Hamlin Inc
Hathaway Instruments
Hughes Products
Jo-Bell Products
Lundy Mfg Corp
Magnetics Inc
Mercoid Corp
M-H Industrial Controls
Molex Products
Murphy Mfg Inc
North Electric Co
Oritron Corp
Philadelphia Scien Glass
Post Electronic
Revere Corp of Amer
Rotary Devices Corp
Square D Co
WE-Director Systems
WE-Gen Purpose Control
Zenith Electric

SWITCHES, Mercury

Almo Mfg Co
Automatic Electric
Berneo Engrg Corp
Durakool Inc
Ebert Electronics
Energy Kontrols
General Controls
General Devices
Gordos Corp
H-B Instrument
McIlvaine G T
Mercoid Corp
Mercury Contacts
M-H Industrial Controls
M-H Micro Switch Div
Newark Controls
Philadelphia Scien Glass
PIC Automation Cts

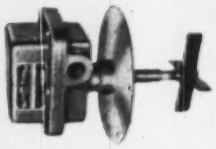
SWITCHES, Pressure and Vacuum

Acro Division
Allen-Bradley
Alloy Bellows
Astromics Div
Automatic Control Co
Barksdale Valves
Bendix Montrose Div
Bristol Co
Burton Mfg Co
Century Elx & Instrs
Coleman Engrg
Computer Instruments
Consol Controls
Consolidated Vacuum
Controls Co of Amer
Cooper Development
Custom-Comp Switches
Cutler-Hammer
Detroit Controls
Dietz Co Henry G
Dwyer Mfg F W
Ebert Electronics
Ellison Draft Gage
Fluid Mechanisms
Furnas Electric
General Controls
General Devices
GE Apparatus Sales Div
GE Gen Purpose Contr Dept
Giannini Controls Corp
Glasco Instr
Goat Co Inc Fred
Gorn Electric
Hawk Tool & Engrg
Hayden Switch Inc
Helicoid Gage Div
Hobbs Corp John W
Hoke Inc
Janco Corp
Jennings Radio Mfg
Kinemotive Corp
Kollsman Instr Corp
Mallory & Co P R
Mason Neilan
Meletron Corp
Mercoid Corp
M-H Industrial Controls
Moore Products Co
Murphy Mfg Inc
Newark Controls
Rochester Div Cse
Rochester Mfg Co
Rosemount Engrg Co
Servonic Instruments
Square D Co
Texas Instruments Inc
United Electric Controls
US Gauge Div
Vemaline Products
Vickers-A & E Center

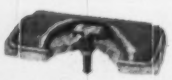
New **ROTO-GUARD**
SHAFT MOTION INDICATOR

Provides positive indication of drop in speed or stopping of machinery. Protects conveyors, elevators, feeders, etc. Rugged, compact; connects to rotating shaft, actuates warning lights or other signals, operates control switches. Simple, positive, low cost. Write for Bulletin RG-21.

*TRADE MARK



ROTO-BIN-DICATOR® motor-driven, paddle-type bin level indicator for use on granular or pulverized material. Ideal for bins under vacuum or pressure. Automatically operates signals and controls.



BIN-DICATOR® diaphragm-type bin level indicator. Successful for 20 years. Automatically operates signals and controls.

BIN-FLO® uses small volume, low pressure air to keep bulk materials moving in chutes, bins, hoppers. No moving parts. Simple installation.

THE BIN-DICATOR CO.
13946-B4 Korchoval • Detroit 15, Mich.

Write for free copy of catalog BD-15 or call
VAlley 2-6952

WE SELL DIRECT • PHONE ORDERS COLLECT

CIRCLE 321 ON READER-SERVICE CARD

C·D·I **ROTARY SWITCHES**

- **For Critical Reliability Applications.**
- **Quick changing of programs, configurations, circuits.**
- **Maintenance problems completely eliminated by unique 5-second wafer replacement models.**

1¼" x 1¼" Rotary Selector Switch, Series RS13. Manually (illustrated), motor or solenoid operated.

2¼" x 2¼" Rotary Selector Switch, Series RS21. Solenoid, manually or motor operated.

3" x 2¼" Rotary Selector Switch, Series RS30. Manually (illustrated), solenoid or motor operated.

4" x 4" Rotary Selector Switch, Series RS40. Motor, manually or solenoid operated.

CHICAGO DYNAMIC INDUSTRIES, Inc.
C·D·I PRECISION PRODUCTS DIVISION
1725 Diversey Blvd., Chicago 14, Illinois
Phone: WEllington 5-4600

CIRCLE 322 ON READER-SERVICE CARD

SWITCHES, Pyrometer
Barber-Colman
Bristol Co
General Devices
Illinois Testing Labs
Leeds & Northrup
Lewis Engrg Co
M-H Brown Instrs Div
Thermo Electric
West Instrument
Winslow Company Inc

SWITCHES, Rotary, including Shaft Motion Types
Acro Division
Advanced Technology Labs
Airflyte Electronics
Allen-Bradley
Allied Radio
Allis-Chalmers
Applied Science Corp
Astronics Div
Automatic Control Co
Automatic Electric
Bin Dicator Co
CTS Corporation
Carling Electric
Carter Mfg
Centralab Div
Chicago Dynamic Indus
Clare & Co C P
Collectron Corp
Controls Co of Amer
Control Switch Div
Cushman Precision Ind
Cutler-Hammer
Daven Co
Digitran Co
Dittmore-Freimuth
Eagle Signal
Eastern Specialty Co
Eastern Technical
Elcor Div
Electric Regulator
Elmfo Development
Electro-Miniatures
Electrosnap
Electro Switch Corp
Farmer Electric
Federal Pacific
Furnas Electric
Gamewell Co
Gemco Electric Co
General Communication
General Devices
GE Apparatus Sales Div
General Railway Signal
Graphik-Circuits
Graphite Metallizing
Grayhill Inc
Hart Mfg Co
Hathaway Instruments
Hughes Products
Industrial Devices Inc
Industrial Timer Corp
Instr Development Labs
International Instr
J-B-T Instruments Inc
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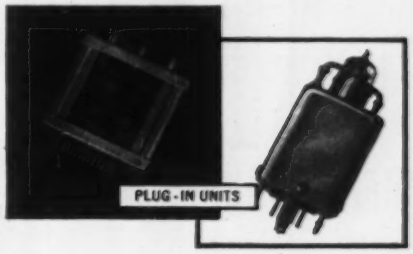

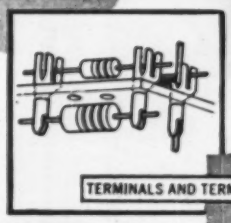

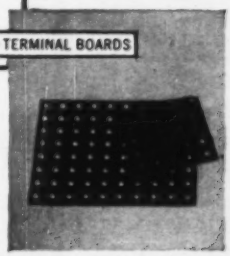

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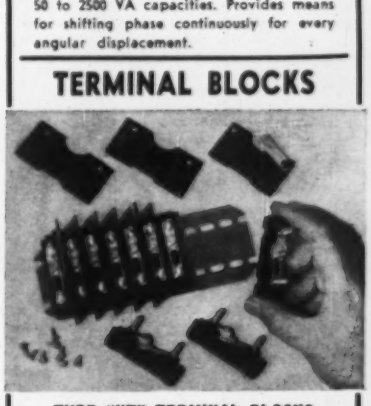

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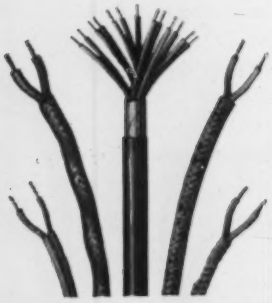

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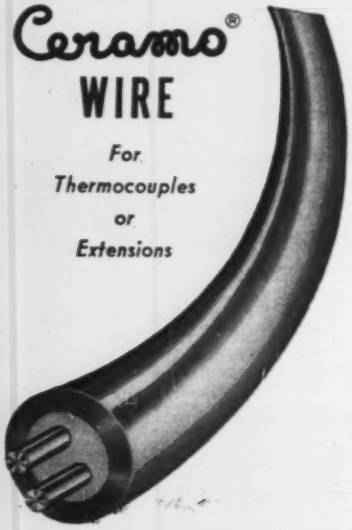

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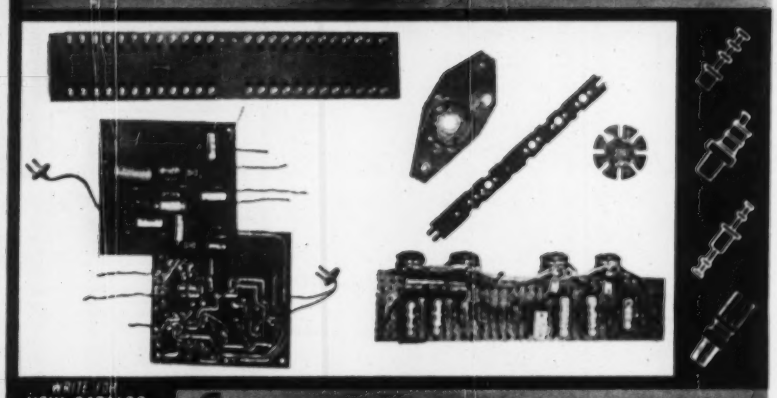

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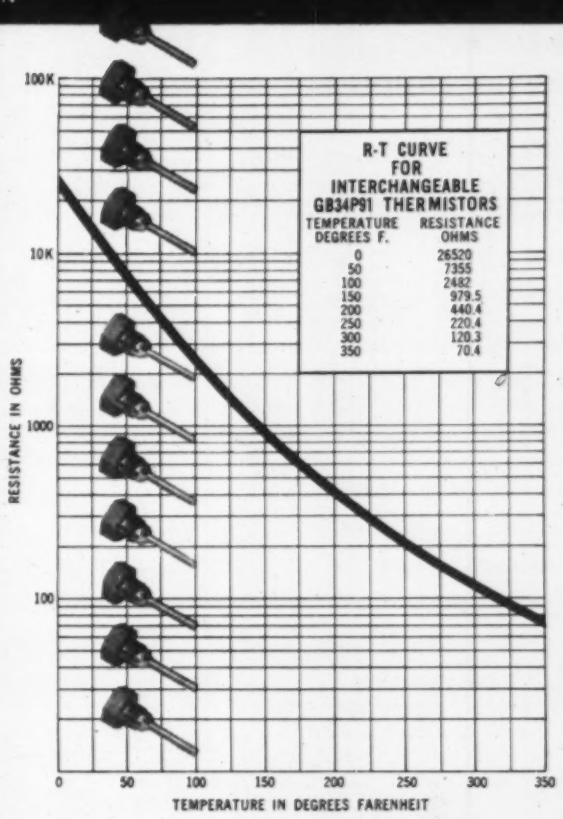

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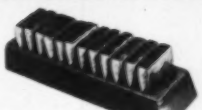

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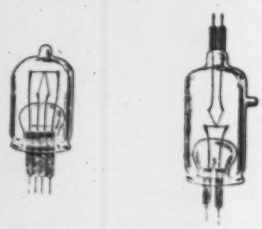

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Warren Transformer
Wells Electronics

TRANSFORMERS, Instrument including Current, and/or Potential, Laboratory

ACDC Electronics Inc
Airpax Electronics
Allis-Chalmers
Altec Lansing Corp
American Optical Co
Annis Co R B
Arnold Magnetics Corp
Associated Research
Basler Electric
Capitron Div AMP
Calif Magnetic Control
Campbell Co
Coast Coil
DJECO
Davenport Mfg
Daystrom/Weston
Del Electronics
Dietz Design
Durakool Inc
Electrical Windings
Electro Powerpacs
Electrodynamic Instr
Electrosolids Corp
Epic Inc
Esterline-Angus
GE Apparatus Sales Div
Goslin Electric
Harder Co Donald C
Hevi Duty Electric
Industrial Transformer
Interelectronics
Kelvin Electric
Kavamil Co
Knopp Inc
Landis & Gyr
Lumen Inc
Mico Instr Co
Microtran Co
Natl Electronics (Wyo)
N Y Transformer
Ortho Filter Corp
Pearson Electronics
Ram Meter Inc
Ratheon/Comm Apparatus
Sangamo Electric Co
Sensitive Research Instr
Southwestern Indus Elx
Specialties Inc
Superior Electric Co
Tech Apparatus Bldrs
Telectro Industries
Transformers Inc
Trenton Transformer
United Transformer
Universal Toroid Coil
Varo Mfg Co
Virginia Electronics
Warren Transformer
Westinghouse Electric

TRANSFORMERS, Microwave

ACDC Electronics Inc
Airtron Inc
Bassler Electric
Communication Accessories
DJECO
Del Electronics
Dietz Design
Durakool Inc
Freed Transformer
Fugle-Miller Labs
Goslin Electric
Industrial Transformer
Kavamil Co
Merit Coil & Transformer
P and H Electronics
Perkin Engrg Corp
Polyphase Instr Co
Raytheon/Comm Apparatus
Sperry Microwave
Stavid Div
Telectro Industries
Telerad Mfg Corp
Trak Electronics
Trenton Transformer
United Transformer
Valor Instruments
Varo Mfg Co
Warren Transformer
Waveline Inc

TRANSFORMERS, Phasing

ACDC Electronics Inc
Basler Electric
Calif Magnetic Control
Communication Accessories
DJECO
Dietz Design
Durakool Inc
ESC Corp
Freed Transformer
Goslin Electric
Industrial Transformer
Interelectronics
Jeffries Transformer
Kavamil Co
Knopp Inc
Microtran Co
Natl Electronics (Wyo)
N Y Transformer
Universal Toroid Coil
Varo Mfg Co
Virginia Electronics
Warren Transformer
Westinghouse Electric

TRANSFORMERS, Isolation Testing

ACDC Electronics Inc
Associated Research
Calif Magnetic Control
DJECO
Del Electronics
Dietz Design
Durakool Inc
Electrical Windings
GE Apparatus Sales Div
Goslin Electric
Ludustrial Instrs Inc
Industrial Transformer
Kavamil Co
Microtran Co
Peschel Electronics
Ratheon/Comm Apparatus
Tech Apparatus Bldrs
Telectro Industries
Transformers Inc
Trenton Transformer
United Transformer
Varo Mfg Co
Virginia Electronics
Warren Transformer

TRANSFORMERS, Isolation

ACDC Electronics Inc
Altec Lansing Corp
Ameloo Inc
Amplifier Corp of Amer
Arnold Magnetics Corp
Audio Development Co
B & B Magnetics Co
Basler Electric
Calif Magnetic Control
Campbell Co
Carol Electronics
Chicago Std Transformer
Coast Coil
Communication Accessories
DJECO
Del Electronics
Dietz Design
Durakool Inc
Elcor Inc
Electrical Windings
Electrodynamic Instr
Electrosolids Corp
Freed Transformer
Gates Electronic
Goslin Electric
Green Rectifier
Harder Co Donald C
Heath Co
Industrial Transformer
Jeffries Transformer
Kavamil Co
Lynch Communication
Mercury Transformer
Merit Coil & Transformer
Microtran Co
Natl Electronics (Wyo)
New England Transformer
N Y Transformer
North Hills Electronics
Pacific Instrument Co
Perkin Engrg Corp
Polyphase Instr Co
Raytheon/Comm Apparatus
Sangamo Electric Co
Specialties Inc
Standard Electrical Prods
Sterling Transformer
Telectro Industries
Transformers Inc
Trenton Transformer
United Transformer
Varo Mfg Co
Warren Transformer

TRANSFORMERS, Pulse

ACDC Electronics Inc
Airpax Electronics
Altec Lansing Corp
Artronic Instr Co
B & B Magnetics Co
Berkshire Laboratories
Bulova Watch Co
Burmac Electronics
Calif Magnetic Control
Campbell Co
Capitron Div AMP
Carol Electronics
Chicago Std Transformer
Communication Accessories
Del Electronics
Dietz Design
Dittmore-Freimuth
Durakool Inc
EMP Electronics Res Lab
ESC Corp
Erie Resistor
Essex Electronics
Filtron Co
Forbes and Wagner
Freed Transformer
GE Apparatus Sales Div
Goslin Electric
Gudeman Co
Gudeman Co of Calif
Hamilton Watch
Harder Co Donald C
Hevi-Duty Electric
Industrial Transformer
Kavamil Co
Kelvin Electric
Laboratory for Electronics
Megadyne Electronics
Merit Coil & Transformer
Microtran Co
New England Transformer
N Y Transformer
North Hills Electric
North Hills Electronics
Ortho Filter Corp
Perkin Engrg Corp
Polyphase Instr Co
Pulse Engrg Inc
Pacific Instrument Co
Packard Bell
PCA Electronics
Pearson Electronics
Raytheon/Comm Apparatus
Riton Electronics
Sangamo Electric Co
Southwestern Indus Elx
Stavid Div
Sterling Transformer
Technitrol Engrg
Telectro Industries
Transformers Inc
United Transformer
Universal Toroid Coil
Valor Instruments
Varo Mfg Co
Warren Transformer
Wells Electronics
Westinghouse Electric

TRANSFORMERS, Ultrasonic

Audio Development Co
Basler Electric
Calif Magnetic Control
Dietz Design
Durakool Inc
Electrodynamic Instr
Electron Arc
Ferranti Electric
Freed Transformer
Fugle-Miller Labs
Goslin Electric
Gulton Industries
Industrial Transformer
Interelectronics
Merit Coil & Transformer
Microtran Co
N Y Transformer
North Hills Electric
North Hills Electronics
Pearson Electronics
Raytheon/Comm Apparatus
Sangamo Electric Co
Sterling Transformer
Telectro Industries
Transformers Inc
Trenton Transformer
United Transformer
Varo Mfg Co
Warren Transformer
Wells Electronics

TRANSFORMERS, Variable, including Voltage Testing and Autotransformers

ACDC Electronics Inc
Airpax Electronics
Allen Avionics Inc
Allis-Chalmers
Avionic Sup, Ir
Basler Electric
Calif Magnetic Control
Canadian Marconi
Chicago Std Transformer
Collins Corp G L
Coast Coil
DJECO
Del Electronics
Dietz Design
Durakool Inc
Eastern Specialty Co
Eder Instrument
Electrical Windings
Electron Arc
Electrosolids Corp
Freed Transformer
Gates Electronic
GE Apparatus Sales Div
General Radio
Goslin Electric
Green Rectifier
Hevi-Duty Electric
Industrial Rectifier
Industrial Transformer
James Vibrapower Co
Jeffries Transformer
Kavamil Co
Land-Air Inc
Megadyne Electronics
Mercury Transformer
Merit Coil & Transformer
Microtran Co
North Atlantic Indus
Ohmite Mfg Co
Pacific Instrument Co
Ramm Rectifier Co
Raytheon/Comm Apparatus
Schaevitz Engineering
Standard Electrical Prods
Strong Electric
Superior Electric Co
System Analyzer Corp
Tech Apparatus Bldrs
Telectro Industries
Trenton Transformer
United Transformer
Universal Toroid Coil
Varo Mfg Co
Virginia Electronics
Westinghouse Electric

TRANSISTORS

Advanced Research
Amperex Electronic
Bourns Inc
CBS Electronics
Clevite Transistor Prods
Delco Radio
DJECO
Fairchild Semiconductor
General Transistor
Hoffman Electronics
Hughes Products
Industro Transistor
Intl Electronics
Kearfott Div
Lansdale Div
M-H Semiconductor Prods
Motorola C and E
Motorola Semicon Prods
Pacific Semiconductors
RCA Defence Electronic
Raytheon/Semiconductor
Theem Semiconductor
Silicon Transistor
Solid State Products
Sylvania Semiconductor
Tech Apparatus Bldrs
Texas Instruments Inc
Transitron Electronic
U S Transistor Corp
Westinghouse Electric
WE-Semiconductor

TUBES, Cathode Ray, including Display, Camera, Storage, etc.

Abtronics Inc
Baird Atomic
British Industries
Canadian Marconi
CBS Electronics
Corning Glass
Diamond Power Specialty
DuMont Labs Allen B
Electronic Tube
Ferranti Electric
GE Power Tube Dept
General Electrodynamics
Hughes Products
Intelex Systems Inc
Intercontinental Elx
Intl Electronics
Lansdale Div
Machlett Labs
RCA Defence Electronic
Raytheon/Indust Comp
Stromberg-Carlson Co
Stromberg-Carlson San Diego
Vacuum Tube Prods
Waterman Products
WE-Electronic Tube

TUBES, Discharge, Gas and Vapor, including Argon, Mercury, Neon, Sodium, etc.

Abtronics Inc
Amglo Corp
Amperex Electronic
British Industries
Canadian Marconi
Central Electronic Mfgrs
Corning Glass
Electrons
Ferranti Electric
GE Power Tube Dept
Gordos Corp
Hanovia Lamp Div
Hughes Products
Intelex Systems Inc
Intl Electronics
Kemlite Labs
Microwave Associates
RCA Defence Electronic
Radiation Research Corp
Raytheon/Indust Comp
Tucor Inc
Ultra Violet Prods
Victoreen Instr Co
WE-Electronic Tube
Wiltec Electronics

TUBES, Electrometer

British Industries
Canadian Marconi
Ferranti Electric
GE Power Tube Dept
Intl Electronics
Raytheon/Indust Comp
Victoreen Instr Co

TUBES, Electron Vacuum

Amperex Electronic
British Industries
Burroughs Elx Tube
Canadian Marconi
CBS Electronics
Central Electronic Mfgrs
Diamond Power Specialty
Eitel-McCullough
Ferranti Electric
GE Power Tube Dept
Hughes Products
Intelex Systems Inc
Intl Electronics
Lansdale Div
Lewis & Kaufman Ltd
Machlett Labs
RCA Defence Electronic
Raytheon/Indust Comp
Research Council Inc
Tucor Inc
Vacuum Tube Prods
Victoreen Instr Co
Watkins-Johnson Co
WE-Electronic Tube
WE-Lamp Div
Wiltec Electronics

TUBES, Geiger-Mueller (see also Counters, G-M)

Amperex Electronic
Baird-Atomic Inc
British Industries
Canadian Marconi
Central Electronic Mfrs
Forro Scientific
Intl Electronics
Isotopes Specialties
Landeverk Electrometer
Nuclear-Chicago
Nuclear Corp of Amer
Nuclear Dev Lab
Nucleonic Corp of Amer
Packard Instrument Co
Raytheon/Indust Comp
Research Council Inc
Traceriab Inc
Victoreen Instr Co
Western Radiation Lab
Wood N Counter Lab

TUBES, Glow (see also Tubes, Discharge)

Amglo Corp
Amperex Electronic
Baird-Atomic Inc
British Industries
Burroughs Elx Tube
Bush Associates G F
CBS Electronics
Canadian Marconi
Ferranti Electric
GE Specialty Control
Intl Electronics
Kemlite Labs
Raytheon/Indust Comp
Tucor Inc
Victoreen Instr Co
WE-Electronic Tube
Wiltec Electronics

TUBES, Ignitron

Amperex Electronic
GE Power Tube Dept
GE Specialty Control
Intl Electronics
Natl Electronics (III)
WE-Electronic Tube
Westinghouse Electric

TUBES, Klystron

Amperex Electronic
Applied Radiation Corp
British Industries
Canadian Marconi
Corning Glass
Eitel-McCullough
GE Power Tube Dept
Hughes Products
Intl Electronics
Polarad Electronics Corp
Raytheon/Microwave
Sperry Gyroscope
Tucor Inc
Varian Associates
Watkins-Johnson Co
WE-Electronic Tube

TUBES, Magnetron

Amperex Electronic
British Industries
Canadian Marconi
Corning Glass
GE Power Tube Dept
Intl Electronics
Microwave Associates
RCA Defence Electronic
Raytheon/Microwave
Watkins-Johnson Co
WE-Electronic Tube

TUBES, Photosensitive including Phototubes and Photocells

Abtronics Inc
Amperex Electronic
CBS Electronics
CBS Laboratories
Diamond Power Specialty
DuMont Labs Allen B
Eastman Kodak
Electro-Mechanical Res
Energy Kontrols
GE Apparatus Sales Div
GE Power Tube Dept
GE Specialty Control
General Electrodynamics
Greiner Co Emil
Intelex Systems Inc
Intl Electronics
Photobell Co
RCA Defence Electronic
Western Radiation Lab

TUBES, Thyratron

Amperex Electronic
British Industries
Canadian Marconi
Edgerton Germeshausen Electrons
GE Power Tube Dept
GE Specialty Control
Hughes Products
Intl Electronics
Natl Electronics (III)
Raytheon/Indust Comp
Tucor Inc
WE-Electronic Tube
Wiltec Electronics

TUBES, Traveling Wave (see also Microwave Equipment-Cat. 3)

British Industries
Canadian Marconi
Corning Glass
Eitel-McCullough
Electronic Tube
GE Power Tube Dept
Hughes Products
Intl Electronics
Lewis & Kaufman Ltd
Porter Inc Geo K
RCA Defence Electronic
Raytheon/Microwave
Sperry Gyroscope
Tucor Inc
Varian Associates
Vat-Shaw Electronics
Watkins-Johnson Co
WE-Electronic Tube

TUBES, X-ray

Aeroquip Corp
Amperex Electronic
British Industries
Corning Glass
Dunlee Corp
Ferranti Electric
GE X-Ray Dept
Kemlite Labs
Machlett Labs
RCA Industrial Elx
Westinghouse Electric

VARISTORS

Edal Industries
GE Magnetic Materials
Gruenberg Electric
Precision Thermometer
Schauer Mfg Corp
Sylvania Semiconductor
Trio Laboratories
Union Switch & Signal
U S Semiconductor Prods
Victory Engrg Corp

VIALS, Level

Askania-Werke
Bache & Co Semon
Berger & Sons C L
Geier & Bluhm
GE Magnetic Materials
Gurley W & L E
Warren-Knight Co

Chromel-R—A modified 80-20 nickel-chromium alloy for use in potentiometers and precision wire wound resistors. Possesses resistivity of 800 ohms/cmf at 20° C., temperature coefficient controlled within 0 ± 10 ppm/°C., exceptional linearity and stability from —65° to +150° C.

Chromel-P/Alumel—The world's standard base metal thermocouple combination for measuring operating temperatures in laboratory and heat treat furnaces—jet engines, nuclear reactors. Accuracy is guaranteed to close specified limits over the entire range from —300° to +2300° F.

Chromel-A—The original 80-20 nickel-chromium resistance alloy that first made electric heating practical. Widely used in major appliances, industrial furnaces and many other devices requiring heating elements capable of operating up to 2150° F. under adverse conditions.

Alloy 815-R—A lower density, higher resistivity iron-chromium-aluminum resistor material that gives you 14% more ohms per pound. Noted for strength, ductility, resistance to wear and corrosion. Resistivity: 815 ohms/cmf at 20° C. Temp. Coeff.: 0 ± 10 ppm/° C. from — 65° to +150° C.

Chromel-P/Copel-XM—A basic thermo-electric alloy combination used primarily as thermopiles to actuate and control operating temperatures of domestic furnaces, hot water heaters, stoves, ranges and other types of heating equipment. Noted for accuracy and reliability in service.

Chromel-AA—A new modified 80-20 type nickel-chromium resistance alloy developed especially for use in controlled atmosphere furnaces. It is highly resistant to corrosion, carburization, oxidation and "green rot" over the entire range of operating temperatures up to 2150° F.

Copel—A 55-45 copper-nickel alloy for use in edge-wound resistors, rheostats, motor starters and many other types of devices where operating Temperatures do not exceed 1000° F. Has resistivity of 294 ohms/cmf at 68° F., low temperature coefficient and exceptional mechanical stability.

Hoskins Cunife—A new improved copper-nickel-iron ductile permanent magnet alloy. Possesses high coercive force and energy product values, greater uniformity. Readily stamped, machined or otherwise formed by conventional methods for economical production of close tolerance parts.

Chromel-C—A 60-16 nickel-chromium-iron alloy used primarily as heating elements in small domestic appliances and other devices that require high resistance in limited space for operating temperatures up to 1700° F. Also used as cold resistor alloy in current-temperature controls.

Unsurpassed for uniformity, performance, reliability

HOSKINS Custom Quality ALLOYS

Chromel-D—A time proven low nickel heating element alloy developed for use in controlled atmosphere furnaces required to operate in the critical temperature range between 1500° and 1800° F. It is highly resistant to corrosion, possesses exceptional mechanical stability.

Alloys 815, 835 and 875—Three superior iron-chromium-aluminum resistance alloys for use at operating temperatures up to 2150°, 2250° and 2350° F. respectively. Suitable for certain types of appliances, industrial furnaces and kilns where proper supports can be provided.

DETAILED TECHNICAL DATA on these and other Hoskins Custom Quality Alloys are yours for the asking. Hoskins metallurgical research, development and customer engineering services are also available to help you solve special design and application problems. Write or call today!

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Developing and producing custom quality alloys is a specialty at Hoskins—and has been for over 50 years. Some, like Chromel-A, have been responsible for the birth and growth of entire industries. Others have made possible many technological advancements in the design and performance of countless different end-products.

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ALLOYS, Glass Sealing
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Cerro De Pasco
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Driver Co Wilbur B
Electronic Parts
Metals & Controls Div
Paul P H & Stein Bros
Semi-Alloys Inc
Texas Instruments Inc
Westinghouse Electric

ALLOYS, High Permeability including H perm, Mu-metals, Permalloy, etc.
Allegheny Ludlum
Alloys Unlimited
American Smelting
Arnold Engineering
Carpenter Steel
Hamilton Watch
Hoskins Mfg
Jan Hardware Mfg
Semi-Alloys Inc
Wall Colmonoy
Westinghouse Electric

ALLOYS, Temperature Compensator
Accurate Specialties
Alloys Unlimited
American Smelting
Carpenter Steel
Cerro De Pasco
Crucible Steel
General Communication
Hoskins Mfg
Texas Instruments Inc

ALUMINUM FRAMES for Small Moving Coils
Electro-Autosizing
H and H Machine
Precision Tube Co

BALSAM
Bushnell & Co D P
Lynn Robert M

BOLTS, Special Stainless Steel
Albany Products Co
Allmetal Screw Products
Amatom Electronic
Continental Screw
Federal Screw Products
Flight Components
Michigan Precision
Standard Pressed Steel
Standard Screw Co
Torrington Co

CABINETS, Instruments
Aircraft Armaments
Alpitec Inc
Artisan Metal Products
Blickman Inc S
Brooks & Perkins
Bud Radio
Calif Chassis
Croname Inc
Danco Metal Products
Dolin Metal Products
Drying Systems Co
Dynacro
Electro-Autosizing
Emcor Ingersoll Prods
Erwood Inc
Fabstrom Company
Fischer & Porter Co
Keystone Mfg Co
Pegasus Labs
Premier Metal Products
Research Specialties Co
Rueckert Mfg Co
Sears Associates
TA Mfg Corp
United Aircraft Prods
Warwick Products
Western Devices Inc
Wickes Engrg & Constr

CEMENT, Optical
Devcon Corp
Zophar Mills Inc

CLEANING COMPOUNDS for Instruments
Alconox Inc
Bacon Industries
Caig Laboratories
Cohebn Inc
Devcon Corp
L and R Mfg Co
Natl Ultrasonic
Princeton Div
Ultrasonic Industries
Zenith Mfg & Chem

CLEANING MACHINES, Instrument, including Vapor Degreasers, Detergent and Ultrasonic
Bendix Pioneer-Central
Branson Ultrasonic
Cohebn Inc
Computer Measurements
L and R Mfg Co
McKenna Labs
Natl Ultrasonic
Pentex Mfg Corp
Princeton Div
Temperature Engrg Corp
Ultrasonic Industries
Zenith Mfg & Chem

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re·li'a·ble: That which can always be counted upon to do what is expected or required

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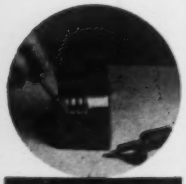

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Bel Art Products
Clover Industries
White Dental Mfg

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Bishop & Co J
Newark Wire Cloth

COIL FORMS, Ceramic and/or Plastic
Accurate Specialties
Aerovox Corp
Caddell Burns Mfg
Centralab Div
Continental-Diamond Fibre
Corning Glass
Darrtil Products
Dittmore-Freimuth
Du-Co Ceramics
Garde Mfg Co
Gries Re producer
Millen Mfg Co
Milton Ross Metals
North Hills Electric
Nylon Molding
Pee-Wee Molding
Polymer Corp
Precision Paper Tube
Slip Ring Co
Space Products
Spaulding Fibre Co
Sterling Precision
Synthane Corp
Wells Electronics

COUNTERS, Coil Turns
Automatic Timing & Contls
Barker & Williamson
Computer Measurements
Dittmore-Freimuth
Eagle Signal
Potter Aeronautical
Presin Co
Sunshine Scientific
Veeder-Root Inc

COVERS, Instrument, including Dustproof and Waterproof (see also Cases-Cat. 8)
Alpitee Inc
Brooks & Perkins
Artisan Metal Works
Bel Art Products
Dance Metal Products
Falstrom Company
FIC Design Corp
Torsion Balance Co

CUSHIONING & PACKAGING PRODUCTS, including Curled Hair, Felt, etc.
American Felt Co
Armour Alliance Inds
Dyneers
Rubatex Div

DIALS and POINTERS, Fluorescent
Ackerman Engravers Inc
American Name Plate & Mfg
Applied Instruments Inc
Automatic Timing & Contls
Cast Optics
Ceramatronics
Corning Glass
Croname Inc
Dearborn Glass
Etching Corp of Calif
Felsenthal & Sons
Millen Mfg Co
Milton Ross Metals
Precision Tube Co
Reeves Instr Corp
U S Radium Corp
Sandy Mfg Co
Seton Name Plate
Stafford Mfg
Vemaline Products
Waltham Precision Instr
Winn Inc J H

DRILLS, Precision
Alfa American Corp
Dumore Co
Fineisen Co A R
Levin & Son Louis
Morris Co J I
Stocker & Yale
Waltham Precision Instr

DUCTS, WIRING, Plastic
Anaconda Metal Hose
Panduit Corp
Semi-Alloys Inc
Taylor Electric

FASTENERS, Plastic
Albany Products Co
Polymer Corp
Richco Plastic Co
Simmons Fastener Corp
United Shoe Machinery

FLUORESCENT CHEMICALS
Baltimore Biological La
Biggs Co Carl H
Micro-Circuits Co
Princeton Div
Switzer Brothers
U S Radium Corp

FOIL, Precision Metals (see also Ribbon)
Accurate Specialties
Alpha Metals Inc
Aluminum Co of Amer
American Smelting
Bishop & Co J
Hamilton Watch
Handy & Harman
Metals & Controls Div
Paul P H & Stein Bros
Res Magnet Wire Co
Secon Metals Corp

GLASS, Circles and Ovals for Instruments
Acme Industrial Co
Alfa-American Corp
Applied Instruments Inc
Bache & Co Semon
Commercial Optical Mfg
Corning Glass
Croname Inc
Crystal Glass Tube
Dearborn Glass
Engis Equipment
Gurley W & L E
Hayward Scientific Glass
Lancaster Glass Corp
Leroy M E Clausing
Lynn Robert M
Marsco Mfg Co
Philadelphia Scien Glass
Precision Glass Products
Renick Co L C
Republic Lens Co
Phoenix Precision Instr
Tiffen Optical
Zenith Optical Lab

GLASS, Colored for Filters
Applied Instruments Inc
Atlee Associates
Bache & Co Semon
Bausch & Lomb
Ceramatronics
Commercial Optical Mfg
Corning Glass
Crystal Glass Tube
Dearborn Glass
Eastman Kodak
Edmund Scientific
Fish-Schurman Corp
Lancaster Glass Corp
Librascope Div
Lynn Robert M
Marsco Mfg Co
Phoenix Precision Instr
Republic Lens Co
Tiffen Optical
Tinsley Labs
Zenith Optical Lab

GLASS, Heat Absorbing and Heat Tempered
Alfa-American Corp
Applied Instruments Inc
Bache & Co Semon
Bausch & Lomb
Commercial Optical Mfg
Corning Glass
Dearborn Glass
Edmund Scientific
Lancaster Glass Corp
Leroy M E Clausing
Lynn Robert M
Marsco Mfg Co
Republic Lens Co
Tiffen Optical
Zenith Optical Lab

GLASS, Infrared Transmitting
Alfa-American Corp
Applied Instruments Inc
Bache & Co Semon
Bausch & Lomb
Commercial Optical Mfg
Corning Glass
Edmund Scientific
Hayward Scientific Glass
Lancaster Glass Corp
Leroy M E Clausing
Librascope Div
Lynn Robert M
Marsco Mfg Co
Pancro Mirrors Inc
Zenith Optical Lab

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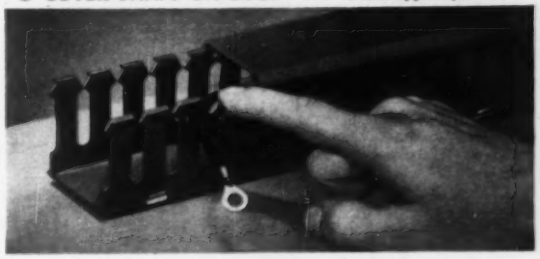

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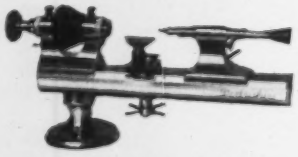

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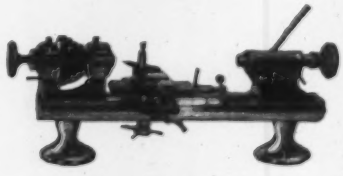

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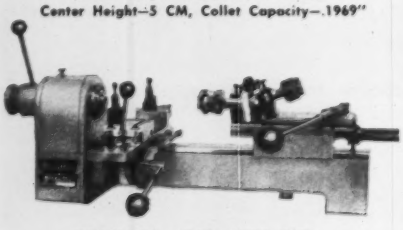

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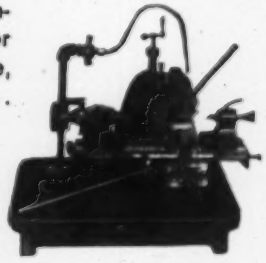

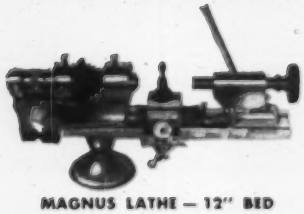

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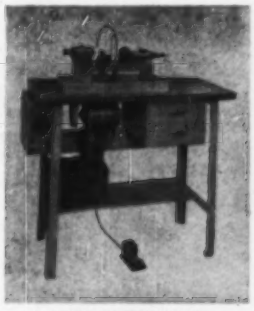

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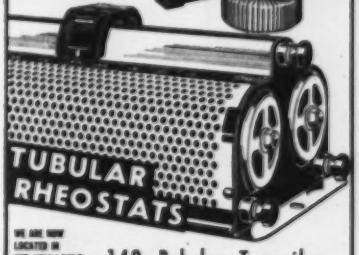

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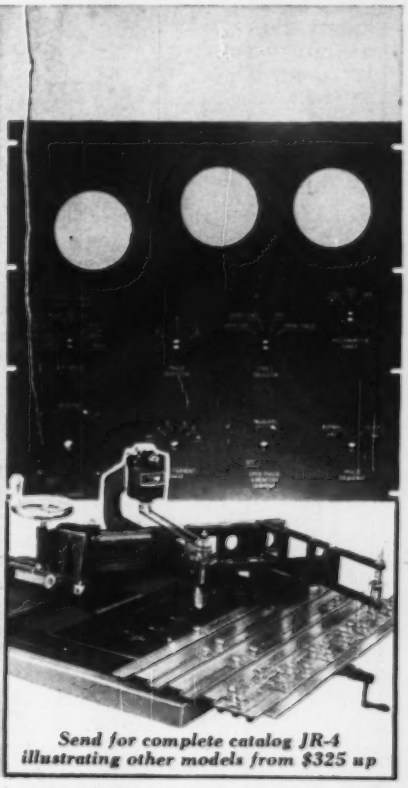

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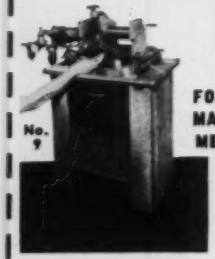

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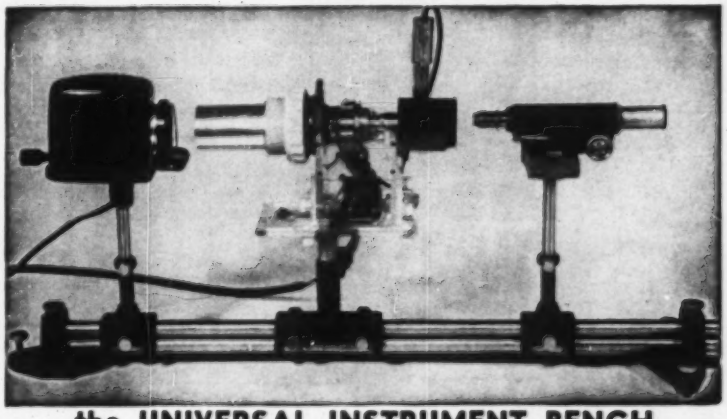

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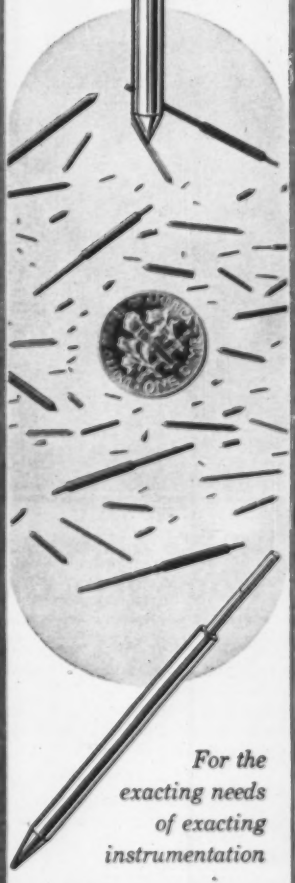

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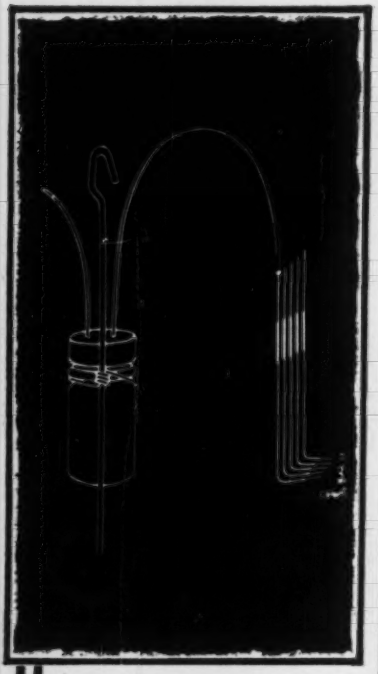

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Coors Procelain
Corning Glass
Engelhard Industries
Gordon Co Claud S
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McDanel Refractory
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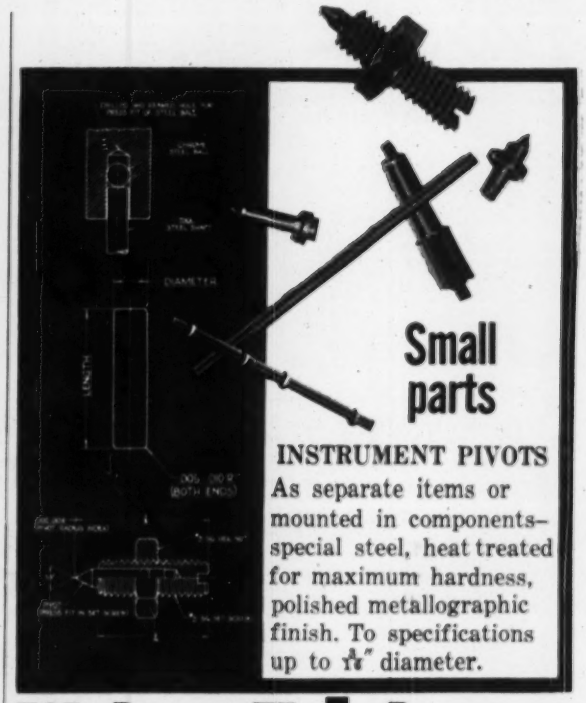
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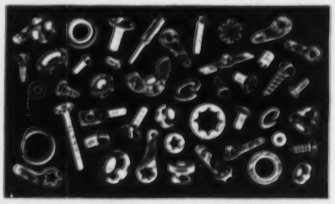

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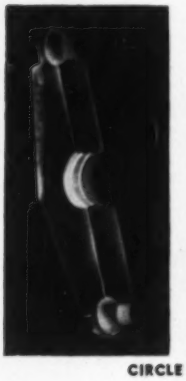

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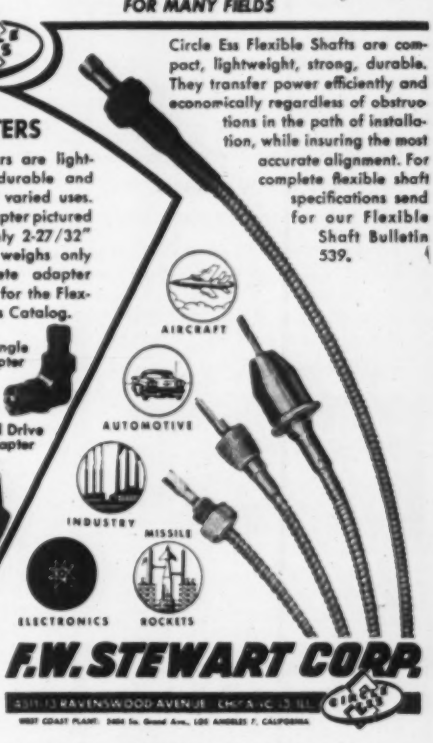

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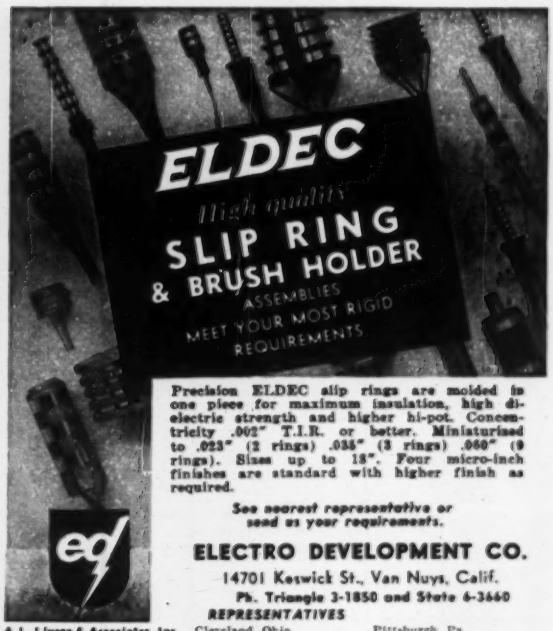

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Accurate Specialties
Alloys Unlimited
American Smelting
British Industries
Dixon Inc William
Green Rectifier
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SOLDERS, Soft
Accurate Specialties
Alloys Unlimited
Alpha Metals Inc
Aluminum Co of Amer
American Smelting
British Industries
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Dixon Inc William
Electrovert Inc
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Alpha Metals Inc
American Smelting
Cerro De Pasco
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Allen Business Machines
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look under the variable, e.g., Pressure Gages (not Gages, Pressure); or look under the noun—Magnets, Permanent (not Permanent Magnets).

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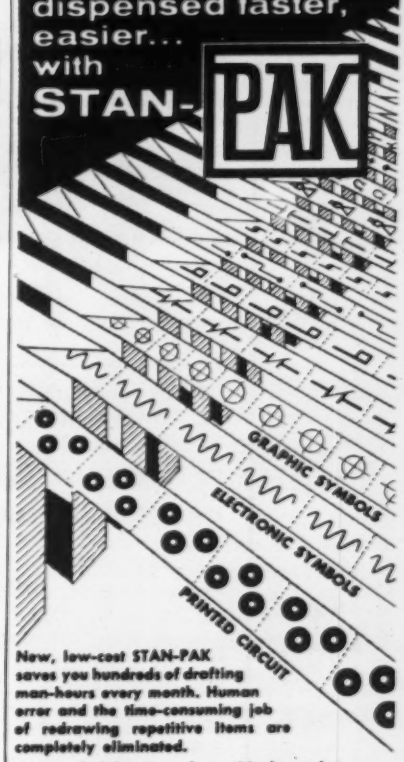

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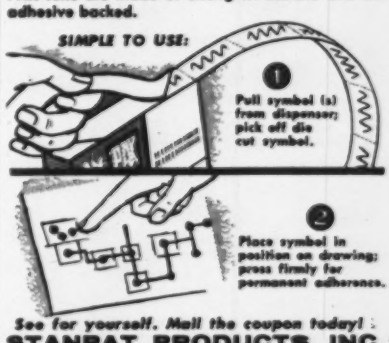

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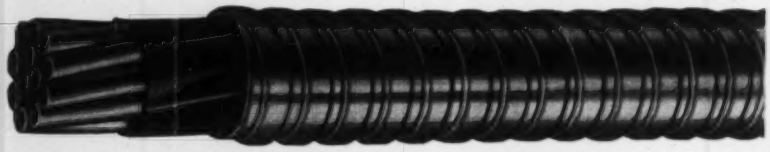
DEKORON MULTICOUPLE EXTENSION WIRE

Dekoron multiple pair harness of thermocouple extension wire is available in three constructions, each in either Iron-Constantan, Copper-Constantan or Chromel-Alumel. Each is guaranteed to meet or exceed ISA specs for standard grade extension wire.

DEKORON ARMORED INSTRUMENT HARNESS

Four different tubing materials combined with four distinct types of armoring give 16 different types of Dekoron Armored Instrument Harness. Special Moore-Loc (modified square lock) galvanized steel armor has almost twice the pull-apart resistance of ordinary armor. Also has cord packing for extra resistance to moisture and fume penetration.



CONDENSED SPECIFICATIONS

COPPER TUBING

To ASTM B68 Type DHP specifications and pressure tested to ASTM B75 specifications.
¼ OD x .030" in 50, 100, 500 and 1000' lengths
⅜ OD x .032" in 50, 100 and 500' lengths
½ OD x .035" in 50 and 100' lengths

ALUMINUM TUBING

Drawn, seamless, annealed 5050-0 Utilitube. Sizes and lengths:
¼ OD x .032" in 50, 100 and 500' lengths
⅜ OD x .035" in 50, 100 and 500' lengths

POLYETHYLENE TUBING

High molecular weight, virgin polyethylene. Sizes and lengths:
¼ OD x .040" in continuous lengths in increments of 100' to 1000'
⅜ OD x .062" in continuous lengths in increments of 100' to 1000'
½ OD x .062" in continuous lengths in increments of 100' to 500'

PLASTIC SPECIFICATIONS

Polyethylene

Used as the sheath on single-line tubing, Metl-Cor and for black "P" Tubing, this polyethylene meets following specifications: ASA, REA, IPCEA requirements on weather resistance, chemical resistance, heat stability, and surpasses requirements under ASTM 1248-52T. Polyethylene, other than black, contains no ultraviolet inhibitor and should not be used outdoors. Black polyethylene is unaffected by ozone. This polyethylene remains flexible below —100°F.

Polyvinyl Chloride

Used as the sheath on Poly-Cor, and single-line tubing, this polyvinyl chloride meets UL, ASTM, IPCEA, AN-C-168, AN-J-C-48A, J-C-129, and MIL-C-915 specifications.

Factory stocks of products described in this bulletin are made of materials that comply with specifications outlined above. Other materials and sizes, tube combinations, etc., are available on special order. Manufacturer reserves right to alter specifications without notice or incurring liability for products already shipped.

ACCESSORIES

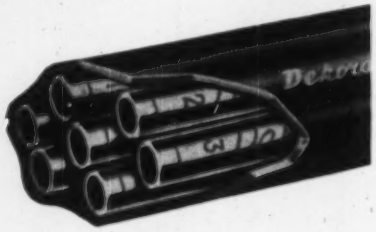
To facilitate installation of Dekoron products, we supply a line of tubing accessories which includes the following: junction and union boxes. E-Z fittings for plastic tubing, "P" Tubing clips, reel stands, harness straighteners, corner troughs and other aids for cutting installation costs.

INSTALLATION DATA

Complete data regarding bending radii, centers of support, hangers and clamp sizes and types, and various proven methods of installation are available on request.

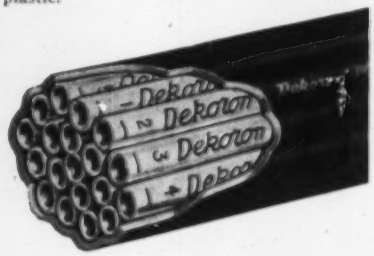
RESEARCH AND DEVELOPMENT SERVICE

Our Research and Development Department is constantly striving to design and develop new and improved products to enable instrument users to cut installed costs to the minimum and to achieve longer service-free life. The facilities of this department are available to you now to develop products and techniques to meet your specific requirements. Since our development program is continuous, we may already have solved your problem. Always check with the Dekoron Products Division first for the answers to your instrument tubing needs.



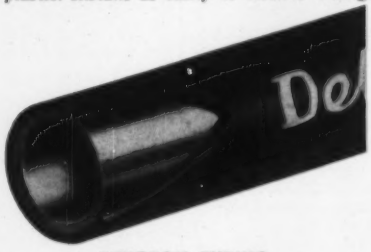
DEKORON METL-COR

Instrument line harness with tube combinations of 2 to 19 individual numbered copper or aluminum tubes covered with chemically resistant sheath of polyethylene plastic.



DEKORON POLY-COR

Bundle of from 2 to 37 individual numbered black polyethylene tubes covered with vinyl plastic. Installs as easily as electric wiring.



DEKORON TUBING

The original plastic-coated metal instrument tubing. Available with copper, aluminum or steel core tube. Resists chemical attack, outlasts expensive alloy tubing.

DEKORON "P" TUBING

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Smith Instrument & Equipment Company, Inc.
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Grand Rapids, Michigan
Phone: GLendale 8-4682

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Toronto, Ontario, Canada
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Process Instrument Systems Ltd.
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Montreal, Quebec, Canada
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(Seattle)

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O. R. Lawrence Company
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Phone: 2-4529

O. R. Lawrence Company
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North Syracuse 12, New York
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Harvey Carruthers Limited
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Herbert Grundage
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Phone: N. Y. C. WOrth 4-0815

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Paul Condit Co., Inc.
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P.O. Box 52796
Baton Rouge, Louisiana
Phone: ELgin 7-5511

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Phone: PRospect 2-5274

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Albuquerque, New Mexico
Phone: ALpine 6-9812 & 6-9682

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Phoenix, Arizona
Phone: CRestwood 4-9293

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Phone: TRemont 9-1633

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Atlanta 5, Georgia
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Newtown, Connecticut
Phone: GArden 6-2470

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Milwaukee 15, Wisconsin
Phone: Mitchell 3-1711

Air Engineering & Supply Company
2719 East Franklin Avenue
Minneapolis 6, Minnesota
Phone: FEderal 9-5579

TUBING, Ceramic

Accurate Specialties
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Coors Porcelain
Corning Glass
Du-Co Ceramics
General Ceramics
Haveg Industries
Illumitronic Eng
McDanel Refractory
Richards Co Arklay S
Saxonburg Ceramics
Thor Cermaics Inc

TUBING, Fibre

Alpha Wire Corp
Amatom Electronic
Auburn Mfg Co
Continental-Diamond Fibre
General Cement
Haveg Industries
Illumitronic Engrg
Natl Vulcanized Fibre
Paramount Paper Tube
Spaulding Fibre Co

TUBING, Flexible

Actuator Prods Corp
Aeroquip Corp
Alpha Wire Corp
Aluminum Co of Amer
Anaconda Metal Hose
Auburn Mfg Co
Bel Art Products
Birnbach Radio Co
Continental-Diamond Fibre
Crescent Insulated Wire
Dekoron Prods Div
Flexaust Co
Flexonics Corp
Garlock Electronic Prod
Illumitronic Eng
Imperial Brass Mfg
M and Q Plastic Products
Ozonite Co
Polymer Corp
Pyramid Plastics Inc
Surprenant Mfg Co
Universal Metal Hose
Varflex Corp
Zippertubing Co

TUBING, Flexible, Multiple Tube Bundles

Airtron Inc
Anaconda Metal Hose
Bailey Meter Co
Birnbach Radio Co
Commercial Plastics
Corning Glass
Crescent Insulated Wire
Dekoron Prods Div
Illumitronic Engrg
Imperial Brass Mfg
M and Q Plastic Products
Nylon Moldin
Okonite Co
Polymer Corp
Pyramid Plastics Inc
Surprenant Mfg Co
Zippertubing Co

TUBING, Fused Quartz

Applied Instruments Inc
Continental-Diamond Fibre
Corning Glass
Engelhard Industries
Richards Co Arklay S
Thermal American
Ultra-Violet Prods
WK-Lamp Div

TUBING, Glass Fibre, Insulation

Alpha Wire Corp
Amer Super Temp Wires
Auburn Mfg Co
Bentley Harris Mfg
Birnbach Radio Co
Brand-Rex Div
Continental-Diamond Fibre
GE Laminated Prods
Haveg Industries
Spaulding Fibre Co
Synthane Corp
Taylor Fibre Co
Varflex Corp
Wells Electronics
Zippertubing Co

TUBING, Laminated Phenolic

Auburn Mfg Co
Continental-Diamond Fibre
Engelhard Industries
GE Laminated Prods
Haveg Industries
Illumitronic Engrg
Mica Insulator Div
Natl Vulcanized Fibre
Precision Paper Tube
Richardson Co
Spaulding Fibre Co
Synthane Corp
Taylor Fibre Co
Texas Instruments Inc
Wilmington Fibre

TUBING, Low Coefficient of Expansion

Applied Instruments Inc
Becker Bros Carbon
Bishop & Co J
Carpenter Steel
Continental-Diamond Fibre
Corning Glass
Metals & Controls Div
Porter Inc Geo K
Superior Tube Co
Uniform Tubes

TUBING, Mica

Auburn Mfg Co
Continental-Diamond Fibre
Haveg Industries
Mica Insulator Div
Precision Paper Tube

TUBING, Miscellaneous, including Illium, Invar, Kovar, special alloy, tantalum

Accurate Specialties
Aeroquip Corp
Allegheny Ludlum
Bishop & Co J
Carpenter Steel
Electronic Parts
Elgin Natl Watch
Metals & Controls Div
Paul F H & Stein Bros
Semi-Alloys Inc
Superior Tube Co
Texas Instruments Inc
Uniform Tubes

TUBING, Nickel, Monel, Inconel

American Brass Co
Bishop & Co J
Carpenter Steel
Crucible Steel
Electronic Parts
Precision Tube Co
Simpson Optical
Superior Tube Co
Texas Instruments Inc
Uniform Tubes

TUBING, Paper

Auburn Mfg Co
Continental-Diamond Fibre
Crescent Insulated Wire
Paramount Paper Tube
Precisioh Paper Tube

TUBING, Plastic

Aeroquip Corp
Alpha Plastics Inc
Alpha Wire Corp
Anaconda Metal Hose
Auburn Mfg Co
Bel Art Products
Borden Chemical
Brand-Rex Div
Colonial Kolonite
Commercial Plastics
Continental-Diamond Fibre
Crescent Insulated Wire
Dekoron Prods Div
DeVilbiss Co
Garlock Electronic Prod
Goodrich Ind Prods B F
Haveg Industries
Hitemp Wires Inc
Illumitronic Engrg
Imperial Brass Mfg
M and Q Plastic Products
Newage Industries
Newman Corp M M
Nylon Moldin
Paul, F. H & Stein Bros
Polymer Corp
Precision Paper Tube
Pyramid Plastics Inc
Resdel Corp
Richardson Co
Surprenant Mfg Co
Synthane Corp
Taylor Fibre Co
Ther Ceramics Inc
Uehling Instrument
Varflex Corp
Weatherhead Fort Wayne
Western International
Westinghouse Electric
Zippertubing Co

TUBING, Plastic Coated Copper, Aluminum

Alpha Wire Corp
Anaconda Metal Hose
Crescent Insulated Wire
Dekoron Prods Div
Kensico Tube

TUBING, Precious Metals, including Platinum

Bishop & Co
Engelhard Industries
Handy & Harman
Metals & Controls Div
Semi-Alloys Inc
Texas Instruments Inc
Uniform Tubes

TUBING, Precision Bore, Metal

Accurate Specialties
Gar Precision Parts
H and H Machine
Kensico Tube
Metals & Controls Div
Precision Tube Co
Superior Tube Co
Uniform Tubes

TUBING, Rubber

Aeroquip Corp
Alpha Wire Corp
Auburn Mfg Co
Bentley Harris Mfg
DeVilbiss Co
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Garlock Electronic Prod
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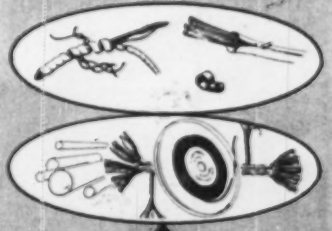

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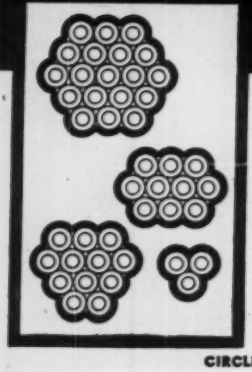

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Bentley Harris Mfg
Birnbach Radio Co
Brand-Rex Div
Precision Paper Tube
Varflex Corp

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Anaconda Metal Hose
Corning Glass
Crescent Insulated Wire
M & Q Plastic Product
Newage Industries
Surprenant Mfg Co

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Aeroquip Corp
B/W Controllers
Birnbach Radio Co
Commercial Plastics
Grinnell Co
M and Q Plastic Products
Nylon Moldin
P-W Industries Inc
Rome Cable Corp

TUNGSTEN, Wire and Products
Bishop & Co
Electronic Parts
Engelhard Industries
Gatti Inc Autele M
Metals & Controls Div
Secon Metals Corp
Victor Equipment
WE-Lamp Div

TWEEZERS, Instrument (see also Tools, Precision)
Bishop & Co J
Dixon Inc William
Dynacrs
Engelhard Industries
Federal Tool Engrg
Fineisen Co A R
Handicraft Tools
Stocker & Yale

WASHERS, Metal, Plastic
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Allmetal Screw Products
Alloys Unlimited
Alpitec Inc
Auburn Mfg Co
Federal Screw Products
M & Q Plastic Product
Nylon Molding
Semi-Alloys Inc
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Dixon Inc William
Fineisen Co A R
Jadow Inc
Kendrick & Davis
L and R Mfg Co
Luze Lamp Corp
Hamilton Watch Co
Morris Co J I
Stocker & Yale
Waltham Precision Instr

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Ewald Instruments
Federal Tool Engrg
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NBC Equipment
Peer Inc
Ramm Rectifier Co
Raytheon/Comm Apparatus
Rosemount Engrg Co
Stittler Corp
Stocker & Yale
Vacuum Tube Prods
Weldmatic Div

WICKS FOR WET BULBS
Hill & Co E Vernon

WIRE, Copper, Enameled
Acme Wire Co
Alpha Wire Corp
Amer Super Temp Wires
Anaconda Wire & Cable
Birnbach Radio Co
Cable Designs Inc
Driver Co Wilbur B
Engelhard Industries
Hitemp Wires Inc
Illumitronic Engrg
Lenz Electric Mfg Co
Lewis Engrg Co
Rea Magnet Wire Co
Rome Cable Corp
Secon Metals Corp

WIRE, Covered
Alpha Wire Corp
Aluminum Co of Amer
Amer Super Temp Wires
Anaconda Wire & Cable
Birnbach Radio Co
Brand-Rex Div
Cable Designs Inc
Chester Cable
Continental Wire
Driver Co Wilbur B
Gordon Co Claud S
Haveg Industries
Lenz Electric Mfg
Lewis Engrg Co
Phalo Plastics Corp
Revere Corp of Amer
Rockland Insul Wire
Rome Cable Corp
Secon Metals Corp
Sequoia Wire
Surprenant Mfg Co
Tensolite Insul Wire
Thermax Wire
Western Insul Wire

WIRE, Fuse
Cable Designs Inc
Driver Co Wilbur B
Engelhard Industries
Haveg Industries
Secon Metals Corp
Surprenant Mfg Co

WIRE, Insulated, all insulations except enameled and refractory
Acme Wire Co
Alpha Wire Corp
Aluminum Co of Amer
Amphenol Cable
Anaconda Wire & Cable
Birnbach Radio Co
Boston Insulated Wire
Brand-Rex Div
Cable Designs Inc
Chester Cable
Continental Wire
Crescent Insulated Wire
Driver Co Wilbur B
Gordon Co Claud S
Gore & Associates
Haveg Industries
Hitemp Wires Inc
Lenz Electric Mfg
Lewis Engrg Co
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Philadelphia Insul Wire
Radiation Applications
Rea Magnet Wire Co
Revere Corp of Amer
Rockbestos Products
Rockland Insul Wire
Rome Cable Corp
Secon Metals Corp
Sequoia Wire
Surprenant Mfg Co
Tensolite Insul Wire
Thermax Wire
Times Wire & Cable
Western Insul Wire

WIRE, Magnet
Acme Wire Co
Alpha Wire Corp
Aluminum Co of Amer
Anaconda Wire & Cable
Birnbach Radio Co
Cable Designs Inc
Crucible Steel
Haveg Industries
Hitemp Wires Inc
Illumitronic Engrg
Rea Magnet Wire Co
Rockbestos Products
Rome Cable Corp
Secon Metals Corp
Tensolite Insul Wire

WIRE, Metal Shielded
Alpha Wire Corp
Anaconda Wire & Cable
Birnbach Radio Co
Bishop & Co J
Brand-Rex Div
Cable Designs Inc
Chester Cable
Continental Wire
Gordon Co Claud S
Haveg Industries
Hitemp Wires Inc
Lenz Electric Mfg
Lewis Engrg Co
Phalo Plastics Corp
Philadelphia Insul Wire
Precision Tube Co
Revere Corp of Amer
Rockland Insul Wire
Rome Cable Corp
Sequoia Wire
Smith Mfg Co Inc
Surprenant Mfg Co
Tensolite Insul Wire
Thermax Wire
Times Wire & Cable
Western Insul Wire
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WIRE, Miscellaneous, including Bismuth, Columbium, Illium, Molybdenum, special alloy, Tantalum
Accurate Specialties
Alloys Unlimited
American Smelting
Bishop & Co
Consol Reactive Metals
Driver Co Wilbur B
Electronic Parts
Elgin Natl Watch
Illumitronic Engrg
Kanthal Corp
Paul F H & Stein Bros
Secon Metals Corp
Semi-Alloys Inc
Sequoia Wire
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WIRE, Nickel, Monel, and Nickel Chromium
Alloys Unlimited
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Consol Reactive Metals
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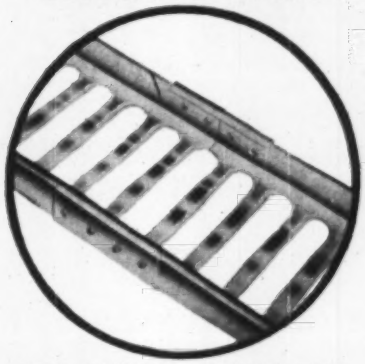

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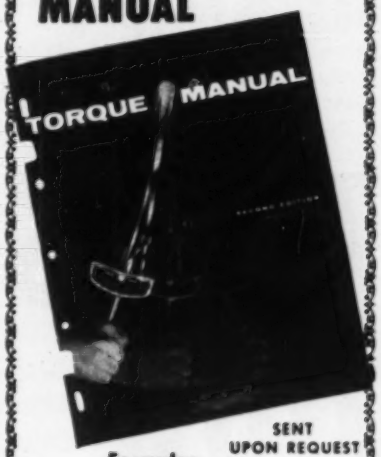

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Kanthal Corp
Rodale Mfg Co
Secon Metals Corp
Semi-Alloys Inc
Sequoia Wire
Surprenant Mfg Co
Waltham Precision Instr
WE-Lamp Div

WIRE, Refractory Insulated

Aero Research Instr
Revere Corp of Amer
Smith Mfg Co Inc

WIRE, Resistance (Platinum or Platinum-Ir.dium)

Bishop & Co J
Consol Reactive Metals
Handy & Harman
Metals & Controls Div
Secon Metals Corp
Semi-Alloys Inc

WIRE, Resistance, except Platinum and Platinum-Iridium

Anaconda Wire & Cable
Carpenter Steel
Driver Co Wilbur B
Gow Mac Instrument
Jellifff Mfg Co
Kanthal Corp
Secon Metals Corp
Surprenant Mfg Co

WIRE, Spring

American Brass Co
Bristol Brass
Crucible Steel
Driver Co Wilbur B
Elgin Natl Watch
Hamilton Watch Co
Stretch Wire Corp
Waltham Precision Instr

WIRE, Thermocouple, Base Metal

Aero Research Instr
Bishop & Co J
Champion Wire & Cable
Driver Co Wilbur B
Gordon Co Claud S
Kanthal Corp
Leeds & Northrup
Lewis Engrg Co
Metals & Controls Div
M-H Brown Instrs Div
Precision Tube Co
Pyrometer Co of Amer
Pyrometer Instr Co
Revere Corp of Amer
Richards Co Arklay S
Secon Metals Corp
Smith Mfg Co Inc
Texas Instruments Inc
Thermo Electric
Thermo Products Co
Times Wire & Cable
West Instrument

WIRE, Thermocouple, Rare Metal

Aero Research Instr
Bishop & Co J
Gordon Co Claud S
Leeds & Northrup
Metals & Controls Div
M-H Brown Instrs Div
Nammac Corp
Pyrometer Co of Amer
Revere Corp of Amer
Richards Co Arklay S
Secon Metals Corp
Smith Mfg Co Inc
Texas Instruments Inc
Thermo Electric
Thermo Products Co
West Instrument

WIRE, Wollaston (for Cross Wires)

Bishop & Co J
Consol Reactive Metals
Secon Metals Corp

WRENCHES, Socket Instrument

Armstrong Bros Tool
Bristol Co
Morris Co J I
PIC Design Corp
Standard Pressed Steel
Standard Screw Co
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WRENCHES, Torque

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A

A-DC Electronics, Inc., 2979 N. Ontario St., Burbank, Calif. VI-9-2414

A'G'A Division, Elastic Stop Nut Corp. of America, 1027 Newark Ave., Elizabeth 3, N. J. Elizabeth 2-2 900

AMP Inc., Eisenhower Blvd., Harrisburg, Pa. JO-4-0101

A.R.F. Products, Inc., 7627 Lake St., River Forest, Ill., FOrest 9-6000

AR&T Electronics Inc., a subsidiary of Baldwin Piano Co., 1101 McAlmont St., Little Rock, Ark. FR-5-6441

Abacus, Inc., 3040 Overland Ave., Los Angeles 34, Calif. VErmont 7-6160

Abrams Instrument Corp., 606 E. Shiawassee St., Lansing 1, Mich. IV-4 19441

Abtronics Inc., 64 South P St., Livermore, Calif. HIllop 7-4785

Accuracy Scientific Instrument Co., 335 E. Chew Ave., Philadelphia 20, Pa. DA 4-5689

Accurate Instrument Co., 2418 West Alabama, Houston 6, Texas JA-6-4947

Accurate Specialties Co., Inc., 338 Hudson St., Hackensack, N. J. Hubbard 9-4650

Ace Electronics Assocs., Inc., 99 Dover St., Somerville, Mass. SO-6-5130

Ace Plastic Co., 91-30 Van Wyck Expwy., Jamaica 35, N. Y. JAmaica 3-5500

Ackerman Engravers Inc., 458 Broadway, New York 13, N. Y. BArclay 7-1479

Ackerman-Gould Co., 10 Nell Ct., P. O. Box 188, Ocean Side, L. I., N. Y. OHiole 8-4110

AC-Lab Equipment Co., 675 Timpson Place, New York (Bronx) 55, N. Y. LUdlow 5-2720-1

Acme Gauge & Instrument Co., Inc., 30 Main St., Brooklyn 1, N. Y. TR-5-9536

Acme Industrial Co., 200-222 N. Laflin St., Chicago 7, Ill. MO-6-4122

Acme Scientific Co., 1450 W. Randolph St., Chicago 7, Ill. MOnroe 6-1834

Acme Wire Co., 1255 Dixwell Ave., New Haven 14, Conn. LOcust 2-2171

Acoustica Associates, Inc., Fairchild Court, Plainview, New York OVerbrook 1-2100

Acro Div., Robertshaw-Fulton Controls Co. 2040 E. Main St., Columbus 16, Ohio. CLearbrook 3-8531

Acro Products Company, 410 Shurs Lane, Philadelphia 28, Pa., IvyRidge 3-1661

Acromag, Inc., 22519 Telegraph Rd., Detroit 41, Mich. EL-6-7211

Acromark Co., 11 Morrell St., Elizabeth 4, N. J. ELizabeth 2-6500
(See advertisement on page 196)

Acton Laboratories, Inc., 533 Main St., Acton, Mass. COlonial 3-7756

Actuator Products Corp., 12 Nashua St., Woburn, Mass. WElls 3-1400

Adage, Inc., 292 Main St., Cambridge 42, Mass. UNiversity 4-6620

Adalet Manufacturing Company, 14300 Lorain Avenue, Cleveland 11, Ohio CL-1-3412

Adams Co., R.P., 225 East Park Drive, Buffalo 17, N. Y. VIctoria 2608

Adams-Russell Co., Inc., 200 Sixth St., Cambridge 42, Mass. UNiversity 8-8040

Adams & Westlake Co., Relay Division, 1025 North Michigan St., Elkhart, Indiana COngress 4-1141

Adel Precision Products Div. of General Metals Corp., 10777 Vanowen Street, Burbank, Calif. TRiangle 7-2611

Adler Electronics, Inc., One Le Fevre Lane, New Rochelle, New York NEw Rochelle 6-1620

Advance Industries, Inc., 640 Memorial Dr., Cambridge 39, Mass. UN-4-6800

Advanced Dynamics, Inc., 16321 Rockside Road, Maple Heights 37, Ohio MOntrose 2-2424

Advanced Electronics Corp., 2 Commercial St., Hicksville, N. Y. OV-1-6400

Advanced Instruments, Inc., 45 Kenneth St., Newton Highlands, 61, Mass. DEcatur 2-8200

Advanced Instrument Corp., 700 South Fourth St., Richmond, Calif. BE-5-5433

Advanced Products Co., 59 Broadway, North Haven, Conn. CEdar 9-1664

Advanced Research Associates, Inc., 4130 Howard Ave., Kensington, Md. WHitehall 2-4800

Advanced Technology Laboratories, 369 Whisman Road, Mountain View, Calif. YOrkshire 8-4461

AEMCO Inc., 10 State St., Mankato, Minnesota 5153 or 2580

Aero Electronics Corp., 1745 W. 134th St., Gardena, Calif. FAculty 1-2196

Aeronautical & Inst. Div., **Robertshaw-Fulton**
California Representative
Carkeek Engineering Co., Inc.
285 S. Euclid Ave., Pasadena, Calif.
MUrray 1-0489

Aero Research Instrument Co., Inc., 315 N. Aberdeen St., Chicago 7, Ill. TAylor 9-6400
(See advertisement on page 63)

Aero Service Corp., 210 E. Courtland St., Philadelphia 20, Pa. GLadstone 7-3000, Ext. 215

Aero Supply Mfg. Co. Inc., 611 W. Main St., Corry, Pa. Corry 2-8261

Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Santa Ana Freeway at Euclid Ave., Anaheim, Calif. KEystone 5-8151

Aeroquip Corp., 300 S. East Ave., Jackson, Mich. ST 3-2585

Aerotec Industries, Inc., Aircraft Equipment Division, Greenwich, Conn. JEfferson 1-8400

Aerotest Laboratories, Inc., 129-11 18th Ave., College Point 56, N. Y. INdependence 1-7272

Aerotronic Associates, Inc., Box 367, Contoocook, N. H. Pioneer 6-3141

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass. Wyman 4-9661

Aidlin Automation, Inc., 1611 E. New York Ave., Brooklyn 12, N. Y. EVergreen 5-4248

Ainslie Corporation, 531 Pond Street, Braintree 85, Mass. VIctor 8-0850

Ainsworth & Sons, Wm., Inc., 2151 Lawrence St., Denver 2, Colo. ALpine 5-1723

Air Conditioning Equipment Corp., 219 E. 44th St., New York 17, N. Y. MU-7-3099

Airborne Accessories Corp., 1414 Chestnut Ave., Hillside 5, N. J. MU 8-0250

Airborne Instruments Laboratory Division of Cutler-Hammer, Deer Park, New York Myrtle 2-6100

Aircraft Armaments, Inc., Industry Lane, Cockeysville, Md. NOrmandy 6-1400

Aircraft/Electronic Controls Div., General Controls Co., 1320 South Flower St., Burbank, Calif.

Airesearch Manufacturing Co., Div. of the Garrett Corp., 9851 So. Sepulveda Blvd., Los Angeles 45, Calif. SPring 6-1010

Airflyte Electronics Company, 535 Avenue A, Bayonne, New Jersey Hemlock 6-2270

Air-Marine Motors, Inc., 360 Bayview Avenue, Amityville, Long Island, New York AM 4-3700

Airmatic Valve, Inc., 7313 Associate Avenue, Cleveland 9, Ohio

Air-Maze Corp., 25000 Miles Rd., Cleveland 28, Ohio AXminster 2-6800

Air-O-Tronics Engineering Co., P. O. Box 31, Lancaster, Calif. WHitehall 3-4654

Airpax Electronics Inc., Seminole Division, Fort Lauderdale, Fla. LUdlow 3-6160

Air-Shields, Inc. Hatboro, Penna. OSborne 5-5200

Airtron Inc., 200 Hanover Ave., Morris Plains N. J. JEfferson 9-5500

Airtronics Inc., 5522 Dorsey Lane, Washington 16, D. C. OLiver 4-1676

Albany Products Co., Inc., 351 Connecticut Ave., So. Norwalk, Conn. TEmple 8-6596

Alconox, Inc., 853 Broadway, New York 3, N. Y. GRamercy 3-1300-01

Alden Electronic & Impulse Recording Equipment Co., Alden Research Center, Westboro, Mass. FOrest 6-4427

Alden Products Co., 136-D N. Main St., Brockton, Mass. JUniper 3-0160

Alectric Manufacturing Company, 7942-39th Ave., Kenosha, Wis. OLympic 7-3248

Alfa-American Corp., 303 W. 42nd St., New York 36, N. Y. PLaza 7-7130

Alfax Paper & Engineering Co. Inc., Washington St., Westboro, Mass. FOrest 6-4467

Alford Manufacturing Co., 299 Atlantic Ave., Boston 10, Mass. HAncock 6-2150

Alfred Electronics, 897 Commercial St., Palo Alta, Calif. DAvenport 6-6496

Alina Corp., 122 E. 2nd St., Mineola, L. I., N. Y. PI-7-5336

All American Tool & Mfg. Co., 8011 Lawndale Ave., Skokie, Ill. ORchard 3-7084

Allegany Instrument Company, 1091 Wills Mountain, Cuberland, Maryland PA-4-1200

Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa. COurt 1-5300

Allen Business Machines, R. C., Inc., 678 Front Ave., N. W. Grand Rapids 4, Mich. GL-6-8541, Ext. 312

Allen Avionics Inc., 255 East 2nd St., Mineola, L. I., N. Y. PI-7-5450

Allenair Corp., 255 East 2nd St., Mineola, L. I., N. Y. PL-7-5450

Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis. OR-1-2000

Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y. BUtterfield 8-7403

Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill. HAymarket 1-6800

Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. SPring 4-3600 Valve Div., York, Pa.

Allis-Chalmers Mfg. (Valve Div) York Pa.
California Representative
Lussombe Engineering Co.
1020 S. Arroyo Pkwy., Pasadena, MUrray 2-3286
3150 El Cajon Blvd., San Diego, ATwater 2-2081

Allison Laboratories, Inc., 11301 East Ocean Avenue, La Habra, Calif. OWen 1-0115

Allmetal Screw Products Co., Inc., 821 Stewart Ave., Garden City, New York Pioneer-1-1200

Alloy Bellows, Inc., 18125 Roseland Rd., Cleveland 12, Ohio IV-6-3990

Alloys Unlimited Inc., 21-01 43rd Ave., Long Island City 1, N. Y. ST-6-4430

All-Tronics, Inc., 45 Bond St., Westbury, L. I., N. Y. ED-3-3090

Almo Mfg. Co., 113-119 Sussex Ave., Newark 3, N. J. HU-2-2185

Almor Instr. Co. Div. (See Illinois Testing)
(See advertisement on page 50)

Alpha Metals Inc., 60L Water Street, Jersey City, N. J. HEnderson-4-6778

Alpha-Molykote Corp., 65 Harvard Ave., Stamford, Conn. FIreside 8-3724

Alpha Plastics, Inc., 78 Okner Parkway, Livingston, N. J. WYman-2-6400

Alpha Wire Corp., 200 Warick St., New York 14, N. Y. ALgonquin 5-5400

Alpitec, Inc., 40 Gleason Ave., Stamford, Conn. Fireside 8-7788

Altair, Inc., Hillside Ave., Terryville, Conn. LUdlow 3-1343

Altec Lansing Corp., 1515 South Manchester, Anaheim, Calif. PR-4-2900

Altemeier & Sons, Theo., 1217 Spring Garden St., Philadelphia 23, Pa. POplar 5-3180
(See advertisement on page 146)

Alto Scientific Co., 855 Commercial St., Palo Alto, Calif. DAvenport 1-3434

Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa. ATlantic 1-4545

Resistors • CB-EB-GB-HB • Resistors
We stock most American brands from ⅛ to 3 watts in composition-carbon, deposited-film and wire wound. All styles from 0.1 ohms to 60 megohms with tolerances from 0.05% up to 1%-2%-5%-10%.
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Amatom Electronic Hardware Co., Inc., 88 Drake Ave. New Rochelle, N. Y. BEverly 5-4441

Amco Engineering Co., 7333 W. Ainslie St., Chicago 31, Ill. UNderhill 7-8500

Amelco, Inc., 12964 Panama St., Los Angeles 66, Calif. UPton 0-5473

Amerac, Inc., Dunham Road, Beverly, Mass. WAlker 2-8611

Amerelay Corp., 130 County Courthouse Rd., New Hyde Park, N. Y. PIoneer 7-2150

American Balance Corp., 48 Potter Ave., New Rochelle, N. Y. NE 6-8080

American Bosch Arma Corp., 320 Fulton Ave., Hempstead, N. Y. PIoneer 2-2000

American Brass Co., 414 Meadow St., Waterbury 20, Conn.

American Cystoscope Makers, Inc., 8 Pelham Parkway, Pelham Manor (Pelham), N. Y. PElham 8-4800

American Data Div., American Electronics, Inc., 75 Front St., Brooklyn, N. Y. ULster 8-0500

American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa., WA 5-8780

American Electrical Heater Co., 6110 Cass Ave., Detroit 2, Mich. TRinity 5-2505

American Electronics, Inc., 1725 W. 6th St., Los Angeles 17, Calif. DUnkirk 5-7401

American Felt Co., Glenville, Conn., JEfferson 1-8700

American Gas Furnace Co., 140 Spring St., Elizabeth, N. J. EL-2-2120

American Kloeckner-Moeller Corp., 4113 E. 11th St. Tulsa 12, Okla. WEbster 6-3048

American Laubscher Corp., 250 W. 57th St., New York 19, N. Y. JUdson 6-7474
(See advertisement on page 200)

American Measurement & Control, 240 Calvary, Waltham 54, Mass. TWinbrook 4-6212

American Meter Co., 13500 Philmont Ave., Philadelphia 16, Pa. ORchard 3-2100
(See advertisement on page 196)

Albany Representative
96 South Swan Street, Albany, N. Y.
ALbany 4-9760

Atlanta Representative
200 Ottley Dr., N.E., Atlanta 24, Ga.
TRinity 6-6783—84

Birmingham Representative
1511 Brown-Marx Bldg., Birmingham 3, Ala.
ALpine 1-8361 or ALpine 2-5507

Boston Representative
250 Stuart Street, Rooms 901-902, Boston 16, Mass.
HUbbard 2-8558—59

Chicago Representative
122 So. Michigan Avenue, Chicago 3, Ill.
HArrison 7-2802

Edmonton Representative
9919-65th Avenue, Edmonton, Alberta, Canada
P.O. Box 4339, So. Edmonton
GEneva 9-4938

Fullerton Representative
300 N. Gilbert Avenue, Fullerton, Calif.
P.O. Box 2007, Orangehurst Station
LAmbert 5-8237

Garland Representative
4400 Forest Lane, Garland, Texas
P.O. Box 309
BRoadway 6-6134

Houston Representative
607 San Jacinto Bldg., Houston 2, Texas
CApitol 2-9051

Kansas Representative
900 Dwight Bldg., Kansas City 5, Mo.
VIctor 2-5176

Milton Representative
Canadian Meter Co., Ltd.
P. O. Box 470, Milton, Ontario, Canada
TRiangle 8-2361

Minneapolis Representative
3100 Humboldt Ave., So. Minneapolis 8, Minn.
TAylor 3-7396

New York Representative
60 East 42nd Street, New York 17, New York
MUrray Hill 7-6980

Pittsburgh Representative
733 Washington Rd., Pittsburgh 28, Penna.
LEhigh 1-2422

Philadelphia Representative
13500 Philmont Ave., Philadelphia 16, Pa.
ORchard 3-2100

San Francisco Representative
206 World Trade Center, San Francisco 11, Calif.
GArfield 1-5975

Tulsa Representative
709 Kennedy Bldg., Fourth St. & Boston Ave.,
P.O. Box 839, Tulsa 1, Oklahoma
LUther 3-5163

Wynnewood Representative
50 East Wynnewood Rd., P.O. Box 175,
Wynnewood, Penna.
TRinity 8-2790 or MIdway 2-9192

American Name Plate & Mfg. Co., 4254 West Arthington St., Chicago 24, Ill. SAcramento 2-2100

American Optical Co., Instrument Div., Box "A", Buffalo 15, N. Y. FI. 4000

American Pamcor, Inc. a Subsidiary of AMP Inc., 181 Hillcrest Ave., Hawertown, Pa. HIlltop 6-5800

American Paulin System, 1524 So. Flower St., Los Angeles 15, Calif. RI 90012

American Precision Engraving Co., 68 E. Post Road, White Plains, N. Y. ROckwell 1-3358

American Printed Circuits Co. Inc., 104 Forrest St., Metuchen, N. J. LIberty 8-5777

American Research Corp. Farmington 8, Conn.
(See advertisement on page 24)

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y. REctor 2-9500

American Super-Temperature Wires, Inc., W. Canal St., Winooski, Vermont. University 2-9634

American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn. CApital 2-3791

American Thermo Electric Co., 1023 N. Fuller Ave., Los Angeles 46, Calif. HOllywood 4-1632
(See advertisement on page 188)

American Thermo-Ware Co., 12-16 Warren St., New York 7, N. Y.

American Time Products, 580—5th Ave., New York 36, N. Y. PLaza 7-1430

American Tradair Corporation, 34-01 30 Street, Long Island City 6, New York EM-1-1414

Amglo Corp., 4333 N. Ravenswood Ave., Chicago 13, Ill. BUckingham 1-2727
(See advertisement on pages 57, 72, 132)

Amot Controls Corp., 1st Street and Nevin Ave., Richmond, Calif. BEacon 2-0476
(See advertisement on page 79)

Ampco Mfg. Co., 246 E. 2nd St., Plainfield, N. J. PLainfield 7-4800

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, L. I., N. Y. Wells 1-6200
Representative—Ohio, W. Pa., W. Va.
Sid Levin & Associates
6252 Mayfield Rd., Cleveland 24, Ohio
HIllcrest 2-8349

Amperite Co., Inc., 561 Broadway, New York 12, N. Y. CAnal 6-1446
(See advertisement on page 181)

Ampex Corp. Instrumentation Div., 934 Charter St. Redwood City, Calif. EMerson 9-1481

Ampex Corp., Redwood City, Calif. Inst. Div.
West Virginia Representative
Electronic Specialty Co.
Delaware Ave. at Randolph St., Charleston 2, W. Va. DIckens 3-5656

Ampex Data Products Co., 934 Charter St., Redwood City, Calif. EMerson 9-7111

Ampex Magnetic Tape Products—Orr Industries Co. A Division of Ampex Corp., P. O. Box 130, Opelika, Alabama SHerwood 5-7443

Amphenol-Borg Electronics Corp., Packaged Electronics Div., 2801 S. 25th Ave., Broadview, Ill. COlumbus 1-2000

Amphenol-Borg Electronics Corp., RF Products Div., 33 E. Franklin, Danbury, Conn. PIoneer 3-9272

Amphenol Cable & Wire Division, Amphenol-Borg Electronics Corp., S. Harlem Ave. at 63rd St., Chicago 38, Ill. BIshop 2-1000

Amphenol Connector Div., Amphenol-Borg Electronics Corp., 1830 S. 54th Ave., Chicago 50, Ill. BIshop 2-1000

Amphenol IP-DK (Indus. Prods.-Danbury Knudsen) Div., Amphenol-Borg Electronics Corp., 33 E. Franklin, Danbury, Conn. PIoneer 3-9272

Amphenol Western Division, Amphenol-Borg Electronics Corp., 9201 Independence Ave., Chatsworth, Calif. DIamond 1-0710

Amplifier Corp. of America, 398 Broadway, New York 13, N. Y. WOrth 6-2929

Amthor Testing Instrument Co. Inc., 45-51 Van Sinderen Ave., Brooklyn 7, N. Y. DIckens 6-8841
(See advertisement on page 47)

Anaconda Metal Hose Division—The American Brass Co., 698 South Main St., Waterbury 20, Conn. PLaza 4-1121

Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York HAnover 2-6300

Anadex Instruments, Inc., 14734 Arminta St., Van Nuys, Calif. STate 0-7911

Analab Instrument Corp., 30 Canfield Road, Cedar Grove, N. J. CEnter 9-6500

Analogue Controls, Inc., 200 Frank Road, Hicksville, N. Y. OVerbrook 1-7300

Analytic Systems Co., 940 N. Fair Oaks Ave., Pasadena Calif. MUrray 1-6634

Analytical Measurements, Inc., 585 Main St., Chatham, N. J. MErcury 5-7474

Anders Electric Products Inc., 50 Brook Road, Needham Heights, Mass. HIllcrest 4-6090

Andersen Laboratories, Inc., 501 New Park Avenue, West Hartford, Conn. AD-3-4491

Anderson Co., V. D., Division of International Basic Economy Corp., 1935 West 96th Street, Cleveland 2, Ohio OL-1-1900

Anderson & Vesa Inc., N. Elm St., Westfield, Mass. LOgan 2-9671

Andromeda, Inc., 2742 Howard Ave., Kensington, Md. LOckwood 5-3775

ANelex Corporation, 150 Causeway St., Boston 14, Mass. RI-2-1720

Anemostat Corp. of America, 10 E. 39th St., N. Y. 16, N. Y. Lexington 2-1400

Anetsberger Brothers, Inc., 186 North Anets Dr., Northbrook, Ill., CRestwood 2-0770
(See advertisement on page 24)

Annin Company, 1040 So. Vail Ave., Montebello, Calif. RAymond 3-9351
Representative—So. Ohio, So. Indiana
The Isaacs Co.
2708 Vine St., Cincinnati 19, Ohio PLaza 1-2414
2676 Salem Ave., Dayton 6, Ohio
CHestview 5-6141

Annis Co., R. B., 1101 N. Delaware St., Indianapolis 2, Ind. ME-5-2836
(See advertisement on page 208)

• Balancing Machines
• Demagnetizers
• Magnetizers
• Recorders—Special
• Split-Core C. Ts.
R. B. ANNIS COMPANY
Indianapolis 2, Ind.

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Antenna & Radome Research Assoc., 27 Bond St., Westbury L. I., N. Y. ED-4-8779

Apex Mossberg Co., Attleboro, Mass.

Apex Scientific Co., 59 Donna Maria Way, Orinda 4, Calif. DRake 6-5041

Appalachian Electronic Instruments, Inc., 810 W. Monroe Ave, Bonceverte, W. Va. MIdway 7-5855

Applied Dynamics Corp., 330 Bear Hill Road, Waltham 54 Mass. TWinbrook 4-7010

Applied Electronics Corporation of N. J., 22 Center, Metuchen, New Jersey LIberty 9-1500

Applied Instruments, Inc., 25 Will Place, Brooklyn 7, N. Y. CLoverdale 7-0885

Applied Physics Corp., 2724 So. Peck Road, Monrovia, Calif HIllcrest 6-7181

Applied Radiation Corp., 2404 No. Main St., Walnut Creek, Calif. YEllowstone 5-2250

Applied Research Laboratories, Inc., P. O. Box 1710, Glendale, Calif. CHapman 5-5524

Applied Science Corp. of Princeton, Princeton, N. J. SW-9-1000

Arcweld Mfg. Co., Box 311, Grove City, Pa. Grove City 1479

ARCCO Instrument Co., 7144 E. Condor St., Los Angeles 22, Calif.
(See advertisement on page 56)

Arenberg Ultrasonic Laboratory, Inc., 94 Green St., Jamaica Plain 30, Mass. JAmaica 2-8640

Arens Controls, Inc., 2017 Greenleaf St., Evanston, Ill. DA 8-4700
(See advertisement on page 19)

Ariste Grid Lamp Products, Inc., 65 Harbor Road, Port Washington, L. I., N. Y. PO-7-6577
(See advertisement on page 128)

Arizona Tool & Die Co., 31 East Rillito St., Tucson, Arizona MAin 3-8842

Arkwin Industries Inc., 648 Main St., Westbury, L. I., N. Y. EDgewood 3-2640

Arma Division, American Bosch Arma, Roosevelt Field, Garden City, N. Y. PIoneer 2-2000

Armel Electronics Inc., 840 5 Ave., Brooklyn 32, N. Y. STerling 8-0422

Armour Alliance Industries, Cushioning Products, 16123 Armour St., N. E., Alliance, Ohio TAlbot 1-3510

Armstrong Bros. Tool Co., 5200 W. Armstrong Ave, Chicago 46, Illinois ROdney 3-3333

Arnold Engineering Co., P.O. Box G, Marengo, Ill. Chicago ANdover 3-8300

Arnold Magnetics Corp., 6656 W. Jefferson Blvd., Los Angeles 16, Calif. VE-75313 or UP-06284

Arnoux Corp., 11924 W. Washington Blvd., Los Angeles 66, Calif. TExas 0-5371

Artisan Electronics Corp., 171 Ridgedale Ave., Morristown, N. J. JEfferson 8-8500

Artisan Metal Products, Inc., 63 Pond St., Waltham 54, Mass. TWinbrook 3-6800

Artisan Metal Works Co., 11400 Madison Ave., Cleveland 2, Ohio. LAkewood 1-6172

Artronic Instrument Co., 11232 Triangle Lane, Silver Spring, Md. LOckwood 5-4447

Asam Manufacturing Co., 1627 W. Fort St., Detroit 16, Mich. WOodward 1-8374

Ashland Electric Products Inc., 32-02 Queens Blvd., Long Island City 1, New York EXeter 2-4910

Askania-Werke, U. S. Branch Office, 4913 Cordell Ave., Bethesda 14, Md. OLiver 4-6060
(See advertisement on page 139)

Assembly Products, Inc., 75 Wilson Mills Road, Chesterland, Ohio. HAmilton 3-4436 (Cleveland)

Associated Control Equip., Inc., P.O. Box 136, Coraopolis, Pa. AMherst 4-8161

Associated Research, Inc., 3766 W. Belmont Ave., Chi-18, Ill. COrnelia 7-4040
(See advertisement on page 111)

Associated Specialties Co., 1751 Main St., Orefield, Pa. EX-5-1275
(See advertisement on page 114)

Associated Testing Laboratories, Inc., 117 Route 46, Wayne, N. J.; Southeastern Div., 1112 Solana Ave., Winter Park, Fla.

Associated Valve Co., 337 W. Walnut St., North Wales, Pa. OXbow 9-4485

Astra Corp., 412 S. Warminster Rd., Hatboro, Pa.
(See advertisement on page 40)

Astra Technical Instrument Corp., 1132 Mission St., So. Pasadena, Calif. RYan 1-2114

Astromics, Div. of Mitchell Camera Corp., 611 W. Harvard St., Glendale 4, Calif. CHapman 5-7580

Astron Corp., 255 Grant Ave., East Newark (Harrison P.O.) N. J. HUmboldt 2-7800

Atkins Technical Inc., 1276 W. 3rd St., Cleveland 13, Ohio SUperior 1-1333
(See advertisement on page 69)

Atkomatic Valve Company, Inc., 545 West Abbott Street, Indianapolis 25, Indiana MElrose 8-6545

Atlantic Pyrometers, Inc., 190 Warburton Ave., Hawthorne, N. J. HAwthorne 7-5877

Atlantic Research Corp., Shirley Highway at Edsall Rd., Alexandria, Va. FLeetwood 4-3400

Atlantis Electronics Corp., 3326 Broadway St., P. O. Box 451, Garland, Texas BRoadway 8-3551

Atlas Electric Devices Co., 4114 N. Ravenswood Ave., Chicago 13, Ill. EA-7-4520

Atlas Engineering Co., Inc., 176 Blue Hill Ave., Roxbury, Mass. HI-5-7100

Atlas Precision Products Company, 3301 Castor Avenue, Philadelphia 24, Pa. JE-5-3700

Atlas Valve Co., 280 South St., Newark 5, N. J.

Atohm Electronics, 7648 San Fernando Road, Sun Valley, Calif. TRiangle 7-9873

Atronic Products, Inc., 1 Bala Ave., Bala Cynwyd, Pa. GReenwood 7-1860

Atwood & Morrill Co., 48 Loring Ave., Salem, Mass. PIoneer 4-5600

Auburn Mfg. Co., 50 Stack St., Middletown, Conn. DIamond 6-6631

Audio Development Co., 2833-13th Ave So., Minneapolis 7, Minn. PArkway 9-7386

Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y. PLaza 1-6640

Audio Instrument Co., Inc., 135 W. 14th St., New York 11, N. Y. ORegon 5-7820

Auerbach Electronics Corp., 1634 Arch St., Philadelphia, Pa. LOcust 3-7737

Autoclave Engineers Sales Corp., 2930 W. 22nd St., Erie, Pa. TE 8-2071

Auto-Control Laboratories, Inc., 333 S. Hindry Ave., Inglewood 1, Calif. OR-8-4934

Automark Marking Equipment Co., 1920 So. Vandeventer Ave., St. Louis 10, Mo. PRospect 3-0567

Automatic Control Co., 995 University Ave., St. Paul 4, Minn. MI-6-1801

Automatic Electric Sales Co., Northlake, Illinois. FIllmore 5-7111

Automatic Metal Products Corp., 323 Berry St., Brooklyn 11, N. Y. EV-8-6057

Automatic Scale Co., Inc., 180 Lafayette St., New York 13, N. Y. CAnal 6-7676

Automatic Switch Co., 50-56 Hanover Rd., Florham Park, N. J. FRontier 7-4600
(See advertisement on page 83)

Automatic Timing & Controls Inc., 201 Old Gulph Road, King of Prussia, Penna. BRoadway 9-1100
(See advertisement on pages 19, 20, 22, 70)

Automatic Valve Co., 37415 Grand River, Farmington, Mich. GR-4-6700

Automation Controls Corp., 5737 W. 98th St., Los Angeles 45, Calif. SPring 6-0420

Automation Devices Inc., 3125 Brandes, Erie, Pa. GL-6-5381

Automation Dynamics Corp., 255 County Road, Tenafly, New Jersey LOwell 7-3232

Automation Gages Inc., 100 Seneca Ave., Rochester 21, New York FIllmore 2-8900

Automation Products, Inc., 3030 Maxroy, Houston 24, Tex. UN-9 1485

Autonetics, Div. of No. American Aviation, Inc., 9150 E. Imperial Hwy., Downey, Calif. SPruce 3-2233

Autotron, Inc., 3629 N. Vermilion St., Danville, Ill. HIckory 6-9650-1
Detroit Representative
The Basic Service Corp.
16544 Plymouth Rd., Detroit 27, Mich.
VErmont 7-8820

Autotronics, Inc., P. O. Box 208, Florissant, Mo. TEmple 7-3565

Avco Corp., Research & Advanced Dev., 201 Lowell St., Wilmington, Mass. OLiver 8-8911, X2700

Avtron Manufacturing, Inc., 10409 Meech Avenue, Cleveland 5, Ohio MIchigan 1-8310

Axler Associates, 33 University Rd., Cambridge 38, Mass.

B

B. & B. Electric Motor Co., 206 Lafayette St., New York 12, N. Y. WO-6-5777

B & B Magnetics Co., 331 E. 4th Ave., La Habra, Calif. OWen 78712

B & F Instruments, Inc., 3644 N. Lawrence St., Philadelphia 40, Pa. GArfield 5-4175

B & H Instrument Co., Inc., 3479 West Vickey Blvd., Fort Worth, Texas

B-I-F Industries, Inc., 345 Harris Ave., Providence 1, R. I. GAspee 1-4303

BJ Electronics, Borg-Warner, 3380 Newport Blvd., Santa Ana, Calif. KI-5 5581

B & K Instruments, Inc., 3044 West 106 St., Cleveland 11, Ohio CLearwater 1-8430

B/W Controller Corp., 2200 E. Maple Road, Birmingham, Mich. MI 4-5940

Babcock Radio Engineering Inc., 1640 Monrovia Ave., Costa Mesa, Calif. LIberty 8-7705

Bacharach Industrial Instrument Co., 200 N. Braddock Ave., Pittsburgh 8, Pa. CHurchill 2-5400
(See advertisement on page 99)

Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y. WAtkins 4-2121
(See advertisement on page 193)

Bacon Industries, Inc., 192 Pleasant St., Watertown 72, Mass. WAterlown 4-5000

Badger Meter Mfg. Co., 4545 W. Brown Deer Road, Milwaukee 18, Wis. FLagstone 5-0400

Bailey Co., Chas. M., 667 Folsom St., San Francisco 7, Calif. EXbrook 7-1611

Bailey Meter Co., 1041 Ivanhoe Rd., Cleveland 10, Ohio, GL-1-4000
(See advertisement on pages 17, 18, 19, 29, 26, 30, 32, 49, 53, 55, 65, 75, 99, 100, 170, 180, 181)

Baird-Atomic, Inc., 33 University Rd., Cambridge 38, Mass. UNiversity 4-7420

Baker Company, Inc., The, 106 Granite St., Biddeford, Me. ATlantic 4-5951. Western Div., Box 597 Chandelr, Ariz. YOrktown 3-4551.

Balco Research Laboratories, Capicator Div., 49-53 Edison Pl., Newark 2, N. J. MI-3-5200

Bald Eagle Corp., 356 Cedar St., St. Paul 1, Minn. CA-2-7257

Baldwin-Lima-Hamilton Corp., Electronics & Instrumentation Div., 42—4th Ave., Waltham 54, Mass. TWInbrook 4-6700

Baltimore Biological Laboratory Inc., 2201 Aisquith St., Baltimore 18, Md.

Baranoff & Associates, A. J., 1214 Park Lane, Santa Ana, Calif. Kimberly 3-8229
(See advertisement on page 209)

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Barden Corp., 200 Park Ave., Danbury, Conn. PIoneer 3-9201

Barker & Williamson Inc., Canal & Beaver Dam Rds., Bristol, Pa. STillwell 8-5581

Barksdale Valves, 5125 Alcoa Ave., Los Angeles 58, Calif. LUdlow 9-6181

Barnes Development Co., 213 W. Baltimore Ave., Lansdowne, Pa. MAdison 6-3294

Barnes Engineering Co., 30 Commerce Rd., Stamford, Conn. FIreside 8-5381

Barnstead Still & Sterilizer Co., 243 Lanesville Terrace, Boston 31, Mass. JA-4-3100

Barton Instrument Corp., 580 Monterey Pass Rd., Monterey Park, Calif. CUmberland 36501

Barworth, Inc., 681 Morris Turnpike, Springfield, N. J. Dr-6-4883

Basler Electric Co., Route 143, P. O. Box 269, Highland, Ill. Telephone 2123

Baso Inc., 730 No. Jackson St., Milwaukee 1, Wis. BRoadway 3-5388

Bastian-Blessing Co., 4201 West Peterson Ave., Chicago 46, Ill. MUlberry 5-1121

Bausch & Lomb Inc., 73861 Bausch St., Rochester 2, N. Y. LOcust 2-3000

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(See advertisement on page 210)

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Beamco, Inc., Irving Park and Church Roads, Bensenville, Ill. POrter 6-6500

Bear Manufacturing Co., Industrial Div., 2016—5th Ave., Rock Island, Ill. Telephone 6-6461

Beattie-Coleman, Inc., 1000 North Olive, Anaheim, Calif. PRospect 4-4503

Beaver Gear Works, Inc., 1025 Parmele St., Rockford, Ill. WOodland 3-9691

Bebell & Bebell Color Laboratories, 108 West 24th St., New York 11, N. Y. WAtkins 4-8573

Becker Brothers Carbon Co., 3450 So. Laramie Ave., Cicero 50, Ill. BIshop 2-1260

Beckman Instruments Inc., Berkeley Div., 2200 Wright Ave., Richmond Calif. LA-6-7730

Beckman Instruments, Inc., Helipot Div., 2500 Fullerton Rd., Fullerton, Calif. TRojan 1-4848

Beckman Instruments, Inc., Scientific & Process Instrs. Div., 2500 Fullerton Rd., Fullerton Calif. TRojan 1-4848

Beckman Instruments, Inc., Spinco Div., 1117 California Ave., Palo Alto Calif. DAvenport 6-1970

Beckman Instruments, Systems Div., 325 North Muller, Anaheim, Calif. PRospect 4-5430

Beckman & Whitley, Inc., 993 E. San Carlos Ave. San Carlos, Calif.

Beede Electrical Instrument Co., Inc., So. Main St., Penacook, New Hampshire. PLaza 3-6362

Behlman Engineering Co., 2911 Winona Ave., Burbank, Calif. Victoria 9-5733

Bekey Electric Div., Genisco Inc., 2245 Federal Ave., Los Angeles 64, Calif. GRanite 8-1276

Bel-Art Products, Pequannock, N. J., OXbow 4-0500

Belfab Corp., 382 Walnut St., Agawam, Mass. RE-7-1277

Belfort Instrument Co., 4 N. Central Ave., Baltimore 2, Md. DI-2-2626

Bell & Gossett Co., Morton Grove, Ill. INdependence 3-4040
(See advertisement on page 17)

Bellco Glass Inc., Edrudo Road, Vineland, N. J. OX-1-1075

Bellmore Gear Div. (see Empire State Laboratories)

Bellofram Corp., Blanchard Rd., Burlington Mass. BRowning 2-2100

Bellows-Valvair, 230 West Market St., Akron 3, Ohio FR-6-2174

Belock Instrument Corp., 112-03 14th Ave., College Point 56, N. Y. HIckory 5-4200

Bemco Inc., 11631 Vanowen St., No. Hollywood Calif.

Bendix Computer Div., Bendix Corp., 5630 Arbor Vitae St., Los Angeles 45, Calif. SPring 6-2220

Bendix Corp., Cincinnati Div., 3130 Wasson Road, Cincinnati 8, Ohio. ELmhurst 1-2323

Bendix Corporation, Eclipse-Pioneer div., Teterboro, N. J., ATlas 8-2000

Bendix Corp., Fries Instrument Div., 1400 Taylor Ave., Baltimore 4, Md. VAlley 5-5200

Bendix Corp., Montrose Div., So. Montrose, Pa. Montrose 570

Bendix Corp., Pioneer Central Div., Hickory Grove Rd., Davenport, Iowa Telephone 4-9101

Bendix Corp., Scintilla Div., Sidney, N. Y. 1Owell 3-9511

Bendix Corp., Utica Div., 211 Seward Ave., Utica N. Y. SWift 7-2500

Bentley-Harris Mfg. Co., Hector & Lime Sts., Conshohocken, Pa. TAylor 8-7800

Bentley Scientific Co., 2811 Seventh St., Berkeley 10, Calif. THornwall 3-6306

Bergen Labs., Inc., 60 Spuce St., Paterson 1, N. J. GR-3-7800

Berger & Sons, Inc., C. L., 37 Williams St., Boston 19, Mass. HIghlands 2-5100

Berkeley/Dynamics, P. O. Box 1098, Burlingame, Calif. DI-3-8707

Berkshire Laboratories, 582 Bank Village, Greenville, N. H. Greenville 111.

Bernco Engineering Corp., 2320 So. Tibbs Ave., Indianapolis 41, Ind. CHapel 1-2871.

Bova Laboratory, Inc., 185 Fourth St., Trenton, N. J. TUxedo 2-6847

Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa. LOcust-4-1620
(See advertisement on pages 58, 105, 111, 135)

Biggs Co., Carl H., 1547—14th St., Santa Monica, Calif. GRanite 8-0461

Bill Jack Scientific Instrument Co., 143 South Cedros Street, Solana Beach, Calif. SKyline 5-1551

Bin-Dicator Co., 13946-27 Kercheval, Detroit 15, Mich. VAlley 2-0952
(See advertisement on page 184)

Biophysical Electronics, Inc., 30 Herman St., Philadelphia 44, Pa. GErmantown 8-5360

Bird & Co., Inc., Richard H., 1 Spruce Street, Waltham, 54, Mass. TWinbrook 4-0150
(See advertisement on pages 183, 183)

Birnbach Radio Co., Inc., 145 Hudson Street, New York 13, N. Y. WOrth 6-5611

Bishop & Co., J., Platinum Works, E. King St., Malvern, Pa. NIagara 4-3100

Black, Sivalls & Bryson, Inc., Controls Div., 7500 East 12th St., Kansas City 26, Missouri Benton 1-7200

Blickman, Inc., S., 516 Gregory Ave., Weehawken, N. J.

Billey Electric Co., 200 Union Station Bldg., Erie, Pa.

Blonder-Tongue Laboratories, Inc., 9 Alling St., Newark 2, N. J. MA-2-8151

Blue M Electric Co., 138th & Chatham St., Blue Island, Ill. FUlton 5-9000

Bobrick Aero Missile Products, 1839 Blake Ave., Los Angeles 39, Calif. NOrmandy 2-3188

Bock Machine Co., 2950 Jonrose Ave., Cincinnati 39, Ohio. JA-2-1171

Bodine Electric Co., 2500 W. Bradley Place, Chicago 18, Ill. IRving 8-3515

Boehm Co., R. A., 58 Brooklyn Ave., Merrick, N. Y.

Boehme, Inc., H.O., 915 Broadway, New York 10, N. Y. SPring 7-2208

Bogart Manufacturing Corp., 315 Seigel St., Brooklyn 6, N. Y. HY-7-4972

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Boonshaft and Fuchs, Inc., Hatboro Industrial Part, Hatboro, Pa. OSborne 2-1240

Boonton Electronics Corp., 738 Speedwell Ave., Morris Plains, N. J.

Borden Chemical Co., Resinite Dept., P. O. Box 1580, Santa Barbara, Calif. WOodland 3134

Borg Clock Div., Amphenol-Borg Electronics Corp., 902 Wisconsin St., Delavan, Wis. SAratoga 8-5531

Borg Equipment Div., Amphenol-Borg Electronics Corp., 120 So. Main St., Janesville, Wis. PL-4-6616

Borg-Warner Controls, Borg-Warner Corp., 3300 Newport Blvd. Santa Ana, Calif. KImberly 5-5581

Boston Gear Works, 14 Hayward St., Quincy 71, Mass. FR-3-0400

Boston Insulated Wire & Cable Co., 65 Bay St., Boston 25, Mass. COlumbia 5-2104

Boulin Instrument Corp., 10 First St., Pelham, N. Y.

Bourns, Inc., 6135 Magnolia Ave., Riverside, Calif. OVerland 4-1700

Bowen Corp., 11 University Rd., Cambridge 38, Mass. UNiversity 4-6170

Bowmar Instrument Corp., 8000 Bluffton Rd., Fort Wayne, Ind. SHerwood 3121

Bowser Inc., 1307 E. Creighton Ave., Ft. Wayne 2, Ind. H-2361

Brabender Corp., 244 Saddle River Rd., Rochelle Park, N. J. HUbbard 7-0214-5

Brabender Instruments, Inc., C.W., 50 E. Wesley St., South Hackensack, N. J. DIamond 3-8425

Brach Manufacturing Corp., Div. of General Bronze Corp., 200 Central Ave., Newark 3, N. J. HUmboldt 2-1500

Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park West, Pelham Manor, N. Y. PElham 8-4346

Brady Co., W. H., 727 W. Glendale Ave., Milwaukee 9, Wis. ED-2-8100

Brailsford & Co., Inc., 670 Milton Road, Rye, N. Y. WOodbine 7-1820-21

Brainin Corp., C. S., 320 Washington St., Mt. Vernon, N. Y. MO-9-5500

Brand—Rex Div., William, American Enka Corp., 34 Sudbury Road, Concord, Mass. EMerson 9-9630

Branson Corp., 41 S. Jefferson Rd., Whippany, N. J. TU-7-1100

Branson Instruments, Inc., 37 Brown House Rd., Stamford Conn. DAvis 4-6721

Branson Ultrasonics Corp., 37 Brown House Rd., Stamford, Conn. Fireside 8-7781
(See advertisement on page 140)

Breese Corporations Inc., 700 Liberty Ave., Union, N. J. MUrdock 6-4000

Brevel Products Corp., 601 West 26 St., New York City 1, N. Y. WAtkins 4-4737

Brew & Co., Richard D., 90 Airport Rd., Concord, N. H. CApitol 5-6666

Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., 153 Mill St., Milford, Conn. TRinity 8-6597
(See advertisement on pages 151, 152)

Briggs Associates, Inc., 10 De Kalb St., Norristown, Pa. BRoadway 9-0400

Briggs Filtration Company, River Road, Washington 16, D. C. OLiver 6-7722

Brinkmann & Co., C. A., Inc., 115 Cutter Mill Road, Great Neck, L. I., N. Y. HUnter 2-4900

Bristol Co., Waterbury 20, Conn. PLaza 4-4451
(See advertisement on pages 19, 21, 40, 44, 53, 55, 59, 65, 68, 186)

Bristol Brass Corp., 580 Broad St., Bristol, Conn. LUdlow 2-3161

British Industries Corp., Div. of Special Instruments, 80 Shore Rd., Port Washington, N. Y. PO-7-7700
(See advertisement on page 170)

Bronoptics Co., 1665 Oak Knoll Ave., San Marino, Calif. SY-9-1022

Brookfield Engineering Labs., Inc., 240 Cushing St., Stoughton, Mass. FIeldbrook 4-4310

Brooks & Perkins, Inc., 1950 W. Fort St., Detroit 16, Mich. TAshmoo 5-5900

Brooks Instrument Co., 407 W. Vine St., Hatfield, Pa. ULysses 5-5174

Pittsburgh Representative
M. S. Jacobs & Associates, Inc
810 Noblestown Rd., Pittsburgh 5, Pa.
WAlnut 2-4212

Bruno-New York Industries Corp., 460 West 34th Street, New York 1, N. Y. LOngacre 4-5930

Brunswick Instruments, P. O. Box 813, New Brunswick, N. J. CHarter 7-5919

Brush Instruments Div., Clevite Corp., 37th & Perkins, Cleveland 14, Ohio. ENdicott 1-3315

Bryant Computer Products Div., P. O. Box 620, 123 Main St., Springfield, Vt. TUrner 5-2141

Buchanan Electrical Products orp., 530 U. S. 22, Hillside N. J. WAverly 3-7474

Buck Instrument Co., Boulder Industrial Park, P. O. Box 938, Boulder, Colorado Hillcrest 2-3741
(See advertisement on page 147)

Bud Radio, Inc., 2118 East 55th St., Cleveland 3, Ohio HEnderson 1-7166
(See advertisement on page 172)

Budd Company, Instrument Div., P. O. Box 245, Phoenixville, Pa. WEllington 3-8965

Budd Lewyt Electronics, Inc., 43-22 Queens St., Long Island City 1, N. Y. EX-2-5650

Budd Stanley o., Inc., 43-01-22nd St., Long Island City, N. Y. STillwell 6-1706

Buff & Buff Mfg. Co., 329 Lamartine St., Jamaica Plain, Mass. JAmaica 4-1770
(See advertisement on page 211)

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(See advertisement on page 27)
Pittsburgh Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa.
WAlnut 2-4212

Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa. FAirfax 1-0076

Bulova Research & Development Labs., Inc., 61-10 Woodside Ave., Woodside 77, N. Y. NEwton 9-5700

Bulova Watch Co., Electronics Division, 61-10 Woodside Avenue, Woodside 77, N. Y. NEwtown 9-5700

Bulow Electric Co., 11000 Capital Ave., Oak Park 37, Mich. LI 7-1133

Bureau of Engraving Inc., Industrial Div., 500 So. 4th St., Minneapolis 15, Minn. FE-9-8721

Burgess Battery Co., Div. of Servel, Inc., Foot of Exchange, Freeport, Ill. AD-2-2161
(See advertisement on page 150)

Burke & James, Inc., 321 So. Wabash Ave., Chicago 4, Ill. HArrison 7-8393

Burling Instrument Co., 18 River Rd., Chatham, N. J. MErcury 5-9481
(See advertisement on pages 62, 69)

Burmac Electronics Co., Inc., 142 S. Long Beach Rd., Rockville Centre, N. Y. OR-8-3070

Burndy Corp., Omaton Div., Richards Ave., Norwalk, Conn. TEmple 8-4444

Burnell & Co., Inc., 10 Pelham Parkway, Pelham Manor, N. Y. PE-8-5000

Burrell Corp., 2223 Fifth Ave., Pittsburgh 19, Pa. GRant 1-2527

Burroughs Corp., 6071 Second Ave., Detroit 2, Mich. TR-5-2200

Burroughs Corp., Electronic Tube Div., P. O. Box 1226, Plainfield, N. J. PL 7-5000

Burrows Equipment Co., 1316 Sherman Ave., Evanston, Ill. UNiversity 4-4175

Burton Mfg. Co., 2520 Colorado Ave., Santa Monica, Calif. TExas 0-7561

Burton-Rogers Co., Sales Div., Hoyt Electrical Instrument Works, 42 Carleton St., Cambridge 42, Mass. EL-4-1643

Bush Associates, G. F., Box 175, Princeton, N. J.

Bushnell & Co., D. P., 2828 E. Foothill Blvd., Pasadena, Calif. MU-18143

Bussmann Manufacturing Div., Mc-Graw-Edison Co., University at Jefferson, St. Louis 7, Mo. GArfiel 1-1740

Bytrex Corp., 50 Hunt St., Newton 58, Mass. WAlnut 6-0360

C

CBS Electronics, A Division of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. SPring 4-2360

CBS Laboratories, a Division of Columbia Broadcasting System, Inc., 227 High Ridge Road, Stamford, Conn. DAvis 5-4321

CDC Control Services, Inc., 400 S. Warminster Rd., Hatboro, Penna.

CGS Laboratories, Inc. (see Trak Electronics).

C & K Components, Inc., 103 Morse St., Newton 58, Mass. WAtertown 6-0800
(See advertisement on page 174)
Rep—Ohio, Indiana, Kentucky
Forrest C. Valentine, Inc.
511 Ft. Wayne Bank, Ft. Wayne, Ind.
Anthony 9122
12417 Cedar Rd., Cleveland Hgts 6, Ohio.
FA-1-0266

C-Mar Instrument Corp., 35 Euclid Ave., Manasquan, N. J. CAstle 2-0515

CTS Corporation, 1142-1232 W. Beardsley Ave., Elkhart, Ind. JAckson 3-0210

Cable Designs, Inc., 66 Rushmore St., Westbury, N. Y. EDgewood 3-5323

Caddell-Burns Mfg. Co., Inc., 40 E. 2nd St., Mineola, N. Y. PIoneer 6-2310

Cadillac Products Co., 571 Webster Ave., New Rochelle, N. Y. NEw Rochelle 6-3475
(See advertisement on page 118)

Cahn Instrument Co., 14511 Paramount Blvd., Paramount, Cal. NE 69456 (Los Angeles)

Caig Laboratories, 48 Stanwood Road, New Hyde Park, L. I., N. Y. PIoneer 2-0278

Cajon Machine Co., 902 E. 140th St., Cleveland 10, Ohio
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The Carl A. Pearson Co., Inc.
272 Winton Rd. N., Rochester 10, N. Y.
BUtler 8-2526

California Chassis Co., 5445 E. Century Blvd., Lynwood, Calif. NEvada 6-9031

California Computer Products, Inc., 8714 Cleta Street, Downey, Calif. WAlnut 3-1913 or SPruce 3-4921

California Controls Co., 1525 Powell Street, Oakland 8, Calif. OLympic 4-8833

California Magnetic Control Corp., 11922 Valerio St., No. Hollywood, Calif. STanley 7-1104

Calif. Technical Indus. Div. of Textron, Inc., 1421 Old County Road, Belmont, Calif. LYtell 3-8466

Calumet Engineering Co., 2246 Calumet Ave., Chicago 16, Ill. DAnube 6-6858

Cambridge Electronics Corporation, Box 23, Newton Lower Falls 62, Mass. WOodward 9-8890

Cambridge Instrument Co., Inc., Graybar Building, 420 Lexington Ave., New York 17, N. Y. Murray Hill 6-0235

Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass. TRowbridge 6-2800

Camera Equipment Co., Inc., 315 W. 43rd St., New York 36, N. Y. JU-6-1429

Campbell Co., Inc., Calin, P. O. Box 529, Miry Brook Rd., Danbury, Conn. PIoneer 3-6701

Canadian Marconi Co., 2442 Trenton Ave., Montreal, P. Q., Canada. REgent 8-9441

Cannon Electric Co., 3208 Humboldt St., Los Angeles 31, Calif. CApitol 5-1251

Cannon Instrument Co., P. O. Box 812, State College, Pa. Phone Boalsburg—HO-6-6233

Capcon, Inc., 61 Stanton St., New York 2, N. Y. GRamercy 5-0080

Capeway Instrument Corp., 680 No. Bedford St., E. Bridgewater, Mass. DRake 8-3103

Capitol Machine Co., 38 Balmforth Avenue, Danbury, Conn. PIoneer 3-2758

Capitron Div., AMP Inc., 155 Park St., Elizabethtown, Pa. EMpire 7-1105

Cardair Division Marmon-Herrington Co., Inc., 307 N. Michigan Ave., Chicago 1, Ill. RAndolph 6-5353

Cargill Detroit Corp., 2254 Cole Ave., Birmingham, Mich.

Carling Electric, Inc., 505 New Park Ave., West Hartford 10, Conn. AD-24461

Carlson Co., 3457 Weidner Ave., Oceanside, L.I., N. Y. ROckville Centre 4-8181

Carmody Corporation, 2360 Wehrle Drive, Buffalo 21, N. Y. SPring-7700

Carol Electronics Corp., 315 W. Stephen St., Martinsburg, W. Va. AMherst 7-8911

Carpenter Steel Co., 125 W. Bern St., Reading, Pa. FRanklin 4-8211

Carruthers & Fernandez, Inc., 1501 Colorado Ave., Santa Monica, Calif. EXbrook 4-6768

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Carter Parts Co., 3401 Madison, Skokie, Ill. ORchard 4-0340

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810 Noblestown Rd., Pittsburgh 5, Pa.
WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3229

Cash Valve Mfg. Corp., A.W., 666 E. Wabash Ave., Decatur, Ill. Telephone 2-5574

Cassell Co., John R., 110 West 42nd St., New York 36, N. Y. WIsconsin 7-7678

Cast Optics Corp., 123 S. Newman St., Hackensack, N. J. HUbbard 9-4000
(See advertisement on page 192)

Central Electronic Mfrs., Div. Nuclear Corp. of America, 2 Richwood Place, Denville, N. J. OAkwood 7-4200

Central Research Laboratories, Inc., Red Wing, Minn. DUnkirk 8-3566

Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill. WEllington 5-8600
(See advertisement on page 127)

Centralab The Electronics Div. of Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 1, Wis. WOodruff 2-9200

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4010 Washington Blvd., Atwater 3-1395-6

IOWA: Cedar Rapids
Jerry Vrbik
419 Third St., S.E., Empire 5-0481

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Stanley A. Harris Co.
1241 Highland Ave., Hillcrest 4-4780, 81

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R. C. Merchant
18411 W. McNichols Rd., Kenwood 5-6000

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338 E. Franklin, Federal 6-2315, 6-6783

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Centre Circuits, Inc., P. O. Box 165, 1101 N. Atherton St., State College, Pa. ADams 8-0514

Century Electronics & Instruments, Inc., 1333 N. Utica, Tulsa 10, Okla. LUther 4-7111

Ceramaseal, Inc., P. O. Box 25, New Lebanon Center, N. Y. W. Lebanon 3-5851

Ceramatronics, Inc., 364 Highland Ave., Passaic, N. J. GRegory 3-8274

Cerro de Pasco Sales Corp., 300 Park Ave., New York 22, N. Y. MUrray Hill 8-8822

Chadwick-Helmuth Co., 472 E. Duarte Rd., Monrovia, Calif. EL 84567

Champion Wire & Cable Co., Inc., P. O. Box 881 Maywood, N. J. DIamond 3-5233

Chart-Pak, Inc., 1 River Rd., Leeds, Mass. JUstice 4-5446 (Northampton)

Chassis-Trak Inc., 525 S. Webster Ave., Indianapolis 19, Indiana Fleetwood 9-5407

Chatham Controls Corp., 33 River Road, Chatham, N. J. ME-5-8892

Chatillon, John & Sons, 85 Cliff St., New York 38, N. Y. BEekman 3-2552

Chemalloy Electronics Corp., Gillespie Airport, Santee, Calif.

Chemiquip Co., 36 East 10th St., New York 3, N. Y. GRamercy 7-3772

Chesapeake Instrument Corp., Shadyside, Md. UNiversity 7-2151

Chester Cable Corp., Chester N. Y., HOmestead 9-2141

Chicago-Allis Mfg. Corp., 113-125 N. Green St., Chicago 7, Ill. MO 6-5050

Chicago Condenser Corp., 3255 W. Armitage Ave., Chicago 47, Ill. CApitol 7-7070

Chicago Dial Indicator Co., 180 North Wacker Drive, Chicago 6, Ill. FRanklin 2-9241

Chicago Dynamic Industries, Inc., 1725 West Diversey Blvd., Chicago 14, Ill. WEllington 5-4600
(See advertisement on page 184)

Chicago Miniature Lamp Works, 1500 N. Ogden Ave., Chicago 10, Ill. MOhawk 4-1741
(See advertisement on page 128)

Chicago Molded Products Corp., Custom Div., 1020 North Kolmar Ave., Chicago 51, Ill. DIckens 2-9000

Chicago Standard Transformer Corp., 3501 W. Addison St., Chicago 18, Ill. INdependence 3-7400

Chrome-Loy Corp., Box 4587, Philadelphia 31, Pa. LOcust 7-5178
(See advertisement on page 89)

Churchill Lighting Corp., 344 Franklin St., Melrose 76, Mass. NOmandy 5-4700

Cincinnati Sub Zero Products, 3930 Reading Road, Cincinnati 29, Ohio PLaza 1-8810

Cincinnati Time Recorder Co., 1733 Central Ave., Cincinnati 14, Ohio. CHerry 1-1995

Circle Seal Products Co., Inc., 2181 E. Foothill Blvd., Pasadena, Calif. MUrray 1-0234

Circo Ultrasonic Corp., 51 Terminal Ave., Clark N. J. FUlton 8-8600

Circon Component Corp., Santa Barbara Municipal Airport, Goleta, Calif. WOodland 7-1113
(See advertisement on page 199)

Clairex Corporation, 19 West 26 Street, New York 10, N. Y. MUrray Hill 4-0940

Clapp & Co., C. P., 3101 Pratt Blvd., Chicago 45, Ill. AMbassador 2-7700

Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio, ULster 1-2000

Clark-Cooper Co., Inc., 305 Market St., Palmyra (Burl. Cty) N. J. TAlmadge 9-1447

Clark Flexible Link Shaft Co., P. O. Box 73, Newton Highlands 61, Mass.,

Clark Manufacturing Co., 1830 E. 38th St., Cleveland 14, Ohio. EX 1-1414

Clarostat Mfg. Co., Inc., Dover, N. H., SHerwood 2-1120

Clary Corp., Electronics Div., 408 Junipero St., San Gabriel, Calif. ATlantic 7-6111

Clean Tread Mat Div., Merit Paper & Chemical Corp., 57 Regent St., Cambridge 40, Mass. TR 6-6122

Clegg Laboratories, Div. of Clegg, Inc., Ridgedale Ave., Morristown, N. J. JE 3-7214

Cleveland Metal Specialties Co., Electronics Div., 1783 E. 21st St., Cleveland 14, Ohio

Cleveland Worm & Gear Co., 3300 E. 80th St., Cleveland 4, Ohio YU 3-4560

Clevite Transistor Products Div., Clevite Corp., 241 Crescent St., Waltham 54, Mass. TWinbrook 4-9330

Clifton Heights, Pa. MAdison 2-1000

Clifton Precision Prods. Co., Inc., Marple at Broadway,

Clough-Brengle Co., 6014 N. Broadway, Chicago 40, Ill. AMbassador 2-2200

Clover Industries, Inc., Dept. #3, 578-588 Young St., Tonawanda, N. Y. LUdlow 1331 & 32

Coast Coil Co., 5333 W. Washington Blvd., Los Angeles 16, Calif. WE 6-6188

Coast Instrument, Inc., 4811 Long Beach Blvd., Long Beach, Calif. GArfield 2-3411

Cobehn, Inc., 226 Passaic Ave., Caldwell, N. J. CApital 6-6675

Co-Engineering Co., P. O. Box 194, Boonton, N. J. DEerfield 4-9300

Coil Winding Equipment Co., 19 Maxwell Ave., Oyster Bay, N. Y. Oyster Bay 6-1285

Coleman Electronics, Inc., 133 East 162nd St., Gardena, Calif. FAculty 1-4775

Coleman Engineering Co., Inc., 3500 Torrance Blvd., Torrance, Calif. FAculty 1-3900

Coleman Instrument Co., Inc., 716 So. Troost, P. O. Box 5127 Tulsa 16, Okla. LUther 7-6691

Coleman Instruments, Inc., 42 Madison St. Maywood, Ill. FI-5-9400

Collectron Corp., 304 E. 45th St., New York City 17, N. Y. MU 9-7120

Collins Corp., G. L., 2820 E. Hullett St., Long Beach 5, Calif. MEtcalf 0-3121

Collins Electronics, Inc., Stevensville, Md. Mission 3-4661

Collins Radio Co., 855 35th St., N. E., Cedar Rapids, Iowa. EMpire 30281

Colonial Kelonite Co., 2232 W. Armitage Ave., Chicago 47, Ill.
(See advertisement on page 204)

Collins Radio Co., Western Division, 2700 West Olive Ave., Burbank, Calif. VIctoria 9-3361

Columbia Electric Mfg. Co., 4519 Hamilton Ave., Cleveland 14, Ohio. ENdicott 1-8060

Columbia Research Laboratories, Inc., MacDade Blvd. & Bullens Lane, Woodlyn, Pa. LEhigh 2-9464

Columbia Technical Corp., 61-02 31st Ave., Woodside 77, N. Y. AS 8-7401

Colvin Laboratories, Inc., 364 Glenwood Ave., East Orange N. J. ORange 7-1221

Comar Electric Co., 3349 Addison St., Chicago 18, Ill. JUniper 8-2410
(See advertisement on page 177)

Combination Pump Valve Co., 851 Preston St., Philadelphia 4, Pa. EVergreen 6-6508

Commercial Filters Corp., 2 Main St., Melrose 76, Mass. DAvenport 4-7000

Commercial Iron Works, 2424 Porter St., Los Angeles 21, Calif. MAdison 7-1051

Commercial Optical Mfg., Inc., 118 Bridge St., P. O. Box 474, Huntington 2, W. V. JAckson 2-1946

Commercial Plastics Co., 945 George St., Chicago 14, Ill. GRace 7-8220

Communication Accessories Co., U. S. Highway 50 and 71 By-Pass, Lee's Summit, Mo. BRoadway 1-1700

Communication Measurements Lab., Inc., 350 Leland Ave., Plainfield, N. J. Plainfield 4-5562

Component Research Co., Inc., 3019 S. Orange Dr. Los Angeles 16, Calif. WE-3-1105

CompuDyne Corp., 400 S. Warminster Rd., Hatboro, Penna. OS-5-4100
California Representative
Lussombe Engineering Co.
1020 S. Arroyo Pkwy., Pasadena. MUrray 2-3384
130 N. "B" St., San Mateo. DIamond 2-7057

Computer Control Co., Inc., Eastern Division, 983 Concord St., Framingham, Mass. CE-5-6220. **Western Division**, 2251 Barry Avenue, Los Angeles 64, Calif. GR-8-0481

Computer Equipment Corp., 1931 Pontius Ave., Los Angeles 25, Calif. GRanite 8-0464

Computer Instruments Corp., 92 Madison Ave., Hempstead, L.I., N. Y. IVanhoe 3-8200

Computer Measurements Co., a Div. of Pacific Industries, Inc., 12970 Bradley Ave., Sylmar Calif. EMpire 7-2161

Computers, Inc., 3407 So. Shepherd Drive, Houston 6, Texas JAckson 49572

Computer System, Inc., Culver Rd., Monmouth Junction, N. J. DAvis 9-2351

Conant Bros. Co., Inc., 427 Riverside Ave., Medford 55, Mass. EXport 5-2246

Conant Laboratories, 6300 O Street, Box 3997, Bethany Station, Lincoln 8, Neb. IVanhoe 8-0432
(See advertisement on page 175)

Conax Corp., 2300 Walden Ave., Buffalo 25, N. Y. HEgent 0600

Concord Control Inc., 1282 Soldiers Field Road, Boston 35, Mass. ALgonquin 4-5106

Con-Elec, 1711 S. Mountain Ave., Monrovia, Calif. ELliot 84571

Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa. LOcust 7-7560
(See advertisement on pages 45, 46, 47, 75, 79)

Conrad, Inc., 141 Jefferson St., Holland, Mich. EXport 2-3161

Consolidated Avionics Corp., 800 Shames Dr., Westbury, N. Y. EDgewood 4-8400

Consolidated Controls Corp., 11 Durant Ave., Bethel, Conn. Pioneer 3-6721

Consolidated Diesel Electric Corp., 880 Canal Street, Stamford, Conn. DAvis 5-2261

Consolidated Electrodynamics Corp., 300 Sierra Madre Villa, Pasadena, Calif. MUrray 1-8421

Consolidated Reactive Metals, Inc., 115 Hoyt Ave., Mamaroneck, N. Y. OWens 8-2300

Consolidated Systems Corp., 1500 So. Shamrock Ave., Monrovia, Calif. ELliott 9-8211

Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y. GLenwood 3-7972

Contact Inc., Main St., Maynard, Mass. TW 7-2642

Continental-Diamond Fibre Corp., Newark, Del. ENdicott 8-8521

Continental Equipment Co., Div. of Fisher Governor Co., 200 Main St., Coraopolis, Penna. AM-4-3010

Continental Pump Co., 1027 So. Vandeventer, St. Louis 10, Mo. JEfferson 1-2840

Continental Screw Co., 450 Mt. Pleasant St., New Bedford, Mass. WY 3-2621

Continental Sensing, Inc., 1950 North Ruby St., Melrose Park, Ill. MUrray 1-1950
(See advertisement on page 84)

Continental Wire Sales Corp., 322 North Cherry St., Ext. (P. O. Box 3661), Wallingford, Conn. CHerry 9-1421

Continental-Wirt Electronics Corp., 5221-27 Greene St., Philadelphia 44, Pa. GErmantown 8-9234

Control—A Division of Magnetics Inc., Butler, Pa. BUtler 73767

Control Circuits, Inc., 66 Marlborough St., Portland, Conn. DI-7-4634

Control Corporation, 718 Central Ave., N. E., Minneapolis 14, Minn. FEderal 5-7893

Control Data Corp., 501 Park Ave., Minneapolis 15, Minn. FEderal 9-0947

Control Dynamics Corporation, 7420 Fulton Ave., North Hollywood, Calif.

Control Electronics Co., Inc., 10 Stepar Place, Huntington Station, L. I., N. Y. HAmilton 7-7961

Control Equipment Corp., 19 Kearney Road, Needham Heights 94, Mass. HIllcrest 4-7550

Control Panel Corp., 517 W. Monroe St., Chicago 6, Ill. DEarborn 2-3228

Control Products Inc., 280 Ridgedale Ave., Harrison, N. J. TUcker 7-5000

Control Switch Division, Controls Company of America, 1420 Delmar Drive, Folcroft, Pa. LUdlow 3-2100

Control Technology Co., 1186 Broadway, New York 1, N. Y. OBegon 9-2770

Controls Co. of America, 9555 Soreng Ave., Schiller Park, Ill. NA 5-9000

Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass. UN4-3250

Convair Instruments, 3595 Frontier St., San Diego 10, Calif. AC-31614

Cook Co., Frank R., 3850 Olive St., Denver 7, Colo. FLorida 5-3531

Cooper Development Corp., 2626 So. Peck Rd., Montuvia, Calif. HIllcrest 6-3128

Coors Procelain Co., 600 9th St., Golden, Colorado CR 9-4533

Copease Corp., 425 Park Ave., New York 17, N .Y. PLaza 3-0692

Copymation Inc., 5650 N. Western, Chicago 45, Ill. ED-4-2200

Corbett Science Labs., F. W., 3117 Venice Blvd., Los Angeles 19, Calif. REpublic 3-5251

Corbin Cabinet Lock Div., 102 Washington St., New Britain, Conn. BAldwin 5-7411

Cornelius Company, Aero Division, 550 39th Avenue N. E., Minneapolis 21, Minn. SUnset 8-8611

Corning Glass Works, Corning, N. Y. Telephone 2-5011. Electronic Components Dept., 550 High St., Bradford, Pa. FOrest 2-5571

Corona Engineering Service, 94-52 Corona Ave., Elmhurst 73, N. Y. ILlinois 7-2777

Corson Electric Mfg. Corp., 540—39th St., Union City, N. J. UNion 6-4227

Cosa Corp., 405 Lexington Ave., New York 17, N. Y. YUkon 6-9606

Coto-Coil Co., Inc., 65 Pavilion Ave., Providence 5, R. I. Williams 1-3355

Coulter Industrial Sales Co., P. O. Box 22, Elmhurst, Ill. TErrace 2-5453

Cox Instruments Div., Geo. L. Nankervis Co., 15300 Fullerton, Detroit 27, Mich. VErmont 8-5780
(See advertisement on page 31)
Rep—So. Ohio, So. Indiana, Kentucky
The Isaacs Co.
2708 Vine St., Cincinnati 19, Ohio. Plaza 1-2414
2676 Salem Ave., Dayton 6, Ohio.
CHestview 5-6141

Cramer Controls Corp., Centerbrook, Conn. SOuth 7-8255

Cratex Mfg. Co., Inc., 1600 Collins Rd., Burlingame, Calif.
(See advertisement on page 192)

Crawford Co., C. B., 16606 Waterloo Rd., Cleveland 10, Ohio KE 1-5415

Crawford Fitting Co., 884 East 140th St., Cleveland 10, Ohio Liberty 1-5531
(See advertisement on page 148)
Rep——Pittsburgh, Pa., Charleston, W. Va.
Fogleman Co., Inc.
3849 Willow Ave., Pittsburgh 34, Pa. LE-1-4005
510 "C" St., S. Charleston 3, Va. RI-4-8401
Rep—N. Y. State (except Metro), N. Pa.
The Carl A. Pearson Co., Inc.
232 Winton Rd. N., Rochester 10, N. Y.
HUtler 8-2526

Crescent Engineering & Research Co., 5440 N. Peck Rd., El Monte, Calif.

Crescent Insulated Wire & Cable Co., 319 North Olden Ave., Trenton 5, N. J. EXport 6-9111
(See advertisement on Inside Back Cover)
Rep—N. Y. State (except Metro), N. Pa.
The Carl A. Pearson Co., Inc.
232 Winton Rd. N., Rochester 10, N. Y.
HUtler 8-2526
Rep—Pittsburgh, Pa., Charleston, W. Va.
Fogleman Co., Inc.
3849 Willow Ave., Pittsburgh 34, Pa. LE-1-4005
510 "C" St., S. Charleston 3, W. Va. RI-4-8401

Crest Instrument Co., 11808 S. Bloomfield Ave., Santa Fe Springs, Calif. UNiversity 3-4781

Croname Inc., 6251 Howard St., Chicago 48, Ill. NIles 7-6100

Crosby-Teletronics Corp., 54 Kinkel St., Westbury, L.I., N. Y. EDgewood 3-1027

Crosby Valve & Gage Co.-The Ashton Valve Co., 43 Kendrick St., Wrentham, Mass., EVergreen 4-2121

Crucible Steel Co. of America, P. O. Box 88, Pittsburgh 30, Pa. ATlantic 1-3800

Crump Instrument Corp. (Subsidiary of Houston Instr. Corp.), 1520 Foley St., Houston 24, Tex. HOmestead 8-2969

Crystal Glass Tube & Cylinder Co., 7310 S. South Chicago Ave., Chicago 19, Ill. DO-3-3277
(See advertisement on page 194)

C-Thru Ruler Co., 327 Windsor St., Hartford 1, Conn. JAckson 7-5231

Cubic Corp., 5575 Kearny Villa Road, San Diego 11, Calif. BRowning 7-6780

Cunningham, Son & Co., Jas., 33 Litchfield St., Rochester 8, N. Y. BAker 5-7240

Cunningham Co., M. E., 1025 Chateau Street, Pittsburgh 33, Pa. AL-1-3280

Curtis Development & Mfg. Co., 3242 North 33rd St., Milwaukee 16, Wisc. HIlltop 5-1817

Curtis Laboratories, Inc., 2718 Griffith Park Blvd., Los Angeles 27, Calif. NOrmandy 2-1176

Curtiss-Wright Corp., Electronics Div., 35 Market St., East Paterson, N. J. SWarthmore 1-0100. IMI Branch, 4401 Lunada Ave. SE, P. O. Box 8324, Albuquerque, N. Mex. AMherst 8-8791

Cushman Precision Industries, 262 Alexander St., Princeton, N. J. WAlnut 1-7008

Custom Component Switches Inc., 3137 Kenwood St., Burbank, Calif. VIctoria 95051

Custom Components, Inc., P. O. Box 248, Caldwell, N. J. CAldwell 6-3403-4

Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J. WYman 1-6403

Customline Control Panels, Inc., 1379 East Linden Ave., Linden, N. J. HUnter 6-1272

Cutler-Hammer, Inc., 503 No. 12th St., Milwaukee 1, Wis. BRoadway 1-7800

D

D&R Ltd., 402 E. Gutierrez, P. O. Box 1500, Santa Barbara, Calif. WOodland 3116

Dage Electric Company, Inc., 67 North Second Street, Beech Grove, Ind. State 7-3305

Dage Television Div., Thompson-Ramo-Wooldridge, W. 10th St., Michigan City, Ind. TR 4-3251

Dahl Co., Geo. W., 86 Tupelo St., Bristol, R. I. CLifford 3-9500

Dales Co., Franklin, 182 E. Mill St., Akron 8, Ohio FO-2-7236

Dalmotor Div., Yuba Consolidated Industries, Inc., 1375 Clay St., Santa Clara, Calif. CHerry 3-9414

Dance Metal Products, Inc., 24018 Detroit Rd., Westlake, Ohio TR-1-2300
(See advertisement on page 170)

Daniel Orifice Fitting Co., Inc., 9720 Katy Rd., Houston 24, Texas. HO 5-3451

Darrill Products Corp., 95 Falmouth St., Attleboro, Mass. ATtlebro 1-4047

Data Display, Inc., 1820 Como Ave., Saint Paul 8, Minn. Midway 6-8673

Datascan Inc., 324 Colfax Ave., Clifton, N. J. PRescott 3-8803

Datex Corp., 1307 So. Myrtle Ave., Monrovia, Calif. ELliott 9-5381

Datran Electronics, 1834 Rosecrans Ave., Manhattan Beach, Calif. OSborne 57131—ORegon 80808

Daven Company, 530 W. Mt. Pleasant Ave., Livingston, N. J. WYman 2-4300

Davenport Mfg. Co., 2530-32 N. Elston Ave., Chicago 47, Ill. Dickens 2-5620

Davidson and Hemmendinger
2857 Nazareth Rd., Easton, Pa.
BLackburn 8-2345, 8-2346

Davidson Optronics, Inc., 223 Ramona Blvd., West Covina, Calif. EDgewood 7-7281
(See advertisement on page 138)

Davies Brothers, Gladstone, N. J., PEapack 8-1290

Davis Instruments, 47 Hallock St., Newark 4, N. J. HUmboldt 2-3060
(See advertisement on page 32)

Davis Instrument Div., Davis Emergency Equipment Co.
Detroit Representative
The Basic Service Corp.
16544 Plymouth Rd., Detroit 27, Mich.
VErmont 7-8820
Pittsburgh and Buffalo Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa.
WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3229

Davis Regulator Co., 2541 S. Washtenaw Ave., Chicago 8, Ill. BIshop 7-5870

Daystrom, Inc., Control Systems Div., 4455 Miramar Road, LaJolla, Calif. GLencourt 4-0421

Daystrom, Incorporated, Military Electronics Div., Archbald, Pa. JErmyn 1100

Daystrom Inc., Weston Instruments Div., 614 Frelinghuysen Ave., Newark 12, N. J. BIgelow 3-4700

Daystrom Transicoil Corp., Worcester, Penna.

Daytronic Corp., 223-227 S. Jefferson St. Dayton 2, Ohio Baldwin 3-7618

Dearborn Electronic Laboratories, Inc., P. O. Box 3431, Orlando, Florida Midway 7-4801

Dearborn Glass Co., 6600 S. Harlem Ave., Bedford Park, Ill. LU 5-0900

Decker Corp., 45 Monument Rd., Bala-Cynwyd, Penna. MOhawk 4-6700

Defender Instrument & Regulator Co., Boody, Ill. ELwin 2519

Defiance Printed Circuit Corp., 81 Albion St., Wakefield, Mass. Crystal 6-5311

DeJur-Amsco Corp., Industrial Sales Div., 45-01 Northern Blvd., Long Island City 1, N. Y. RAvenswood 1-4009

Dekoron Products Div., see Samuel Moore & Co.

Delavan Mfg. Co., West Des Moines, Iowa
(See advertisement on page 23)

Del Electronics Corp., 521 Homestead Ave., Mt. Vernon, N. Y. OWens 9-2000
(See advertisement on page 114)

Delco Radio Div., General Motors Corp., 700 E. Firmin, Kokomo, Ind. GLadstone 2 8211

Delta Design Inc., 3163 Adams, San Diego, Sales Office 7460 Girard Ave., LaJolla, Calif. GLencourt 4-1185
(See advertisement on page 62)

Delta-f, Inc., 113 E. State St., Geneva, Ill. Telephone 5600

Deltime Inc., 139 Hoyt Street, Mamaroneck, N. Y. OWens 8-5800

Deltron, Inc., 4th and Cambria Streets, Philadelphia 33, Pa. RE 9-1101

DeMornay-Bonardi, 780 So. Arroyo Parkway, Pasadena, Calif. SYcamore 2-4142

Denison Engineering Div., American Brake Shoe Co., 1160 Dublin Road, Columbus 16, Ohio. HUdson 8-1191

Derbyshire, Inc., F. W., 157 High St., Waltham, Mass.
(See advertisement on page 194)

Designers for Industry, Inc., 4241 Fulton Pkwy., Cleveland 9, Ohio. SHadyside 9-0760

Designs for Tomorrow, Inc., 6425 Etzel Ave., St. Louis 33, Mo. PArkview 6-5222

Detecto Scales, Inc., 540 Park Ave., Brooklyn 5, N. Y. MA 4-6100

Detroit Coil Co., 2435 Hilton Rd., Ferndale 20, Mich. JOrdan 6-3950

Detroit Controls Div., American Standard Corp., 5900 Trumbull Ave., Detroit 8, Mich. TRinity 2-0300

Deutsch Company, 700 Avalon Blvd., Los Angeles 3, Calif. PLeasant 1-4131—LUdlow 3-6421

Devco Engineering, Inc., Pier Lane West, Caldwell, N. J. CApital 6-0810

Devcon Corp., 400 Endicott St., Danvers, Mass. SP 4-1990, 1991

Development Engineering Co., Inc., 9 Cross St., Norwalk, Conn. VIctor 7-7720

DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio GReenwood 4-5411

DeZurik Corp., Sartell, Minn. BLackburn 1-0221
Pittsburgh and Buffalo Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa. WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3229

Dialight Corp., 60 Stewart Ave., Brooklyn 37, N. Y. HYacinth 7-7600
(See advertisement on page 174)

Dialtron Corp., 203 Harrison Place, Brooklyn 37, N. Y. HYacinth 7-7660

Diamond Antenna & Microwave Corp., River St., Winchester, Mass. CRystal 9-4650

Diamond Power Specialty Corp., Electronics Div., P. O. Box 415, Lancaster, Ohio. Olive 3-6540
Detroit Representative
The Basic Service Corp.
16544 Plymouth Rd., Detroit 27, Mich.
VErmont 7-8820

Dian Laboratories, Inc., 611 Broadway, New York 12, N. Y. AL 4-6355

Di/An Controls, Inc., 40 Leon St., Boston 15, Mass. HIghlands 5-5840

Diatron Inc., 3339 N. Rice Ave., Houston, Texas

Dice Company, J.W., 16 Highwood Ave., Englewood, N. J. LOwell 9-0471
(See advertisement on page 143)

Dickson Company, 7420 Woodlawn Ave., Chicago 19, Ill. PLaza 2-0089
California Representative
Carkeek Engineering Co., Inc.
285 S. Euclid Ave., Pasadena, Calif.
MUrray 1-0489

Diehl Manufacturing Co., 1116 Finderne Ave., Somerville N. J. RAndolph 5-2200
California Representative
Luscombe Engineering Co.
1020 S. Arroyo Pkwy., Pasadena. MUrray 2-3386
130 N. "B" St., San Mateo. Dimond 3-7057

Dietert Co., Harry W., 9330 Roselawn Ave., Detroit 4, Mich. WEbster 3-9790

Dietz Design, Inc., 12921 Fifth St., Grandview 17, Mo. SOuth 1-7216

Dietz Co., Inc., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y. RAvenswood 6-3347

Diffraction Prod. Inc., North Maywood Dr. & 17th Ave., Maywood, Ill. FI 3-1546

Digitran Co., A Division of Endevco Corp., 660 So. Arroyo Parkway, Pasadena, Calif. MUrray 9667

Digitronics Corp., Albertson Ave., Albertson, L. I., N. Y. PIoneer 7-5090
Representative—S. Calif., Ariz., N. Mex.
DynaSales Company
1226 S. Atlantic Blvd., Los Angeles 22, Calif.
ANgelus 8-1175

Dillon & Co., Inc., W. C., 14620 Keswick St., Van Nuys, Calif. STate 5-3168
(See advertisement on page 144)
Detroit Representative
VErmont 7-8820
The Basic Service Corp.
16544 Plymouth Rd., Detroit 27, Mich.

Dimco-Gray Co., 207 E. 6th St., Dayton 2, Ohio BAldwin 2-6703
(See advertisement on page 216)

Disc Instruments Inc., 12671 Bubbling Well Road, Santa Ana, Calif. Lincoln 4-9210

Dit-Mco, Inc., 911 Broadway, Kansas City 5, Mo. Harrison 10611
(See advertisement on page 216)

Dittmore—Freimuth Corp., 2517 East Norwich St., Milwaukee 7, Wis. HUmboldt 3-7724

Dixon Inc., William, 32-42 E. Kinney St., Newark 1, N. J.

DJECO Div. of Djordjevic Engineering Co., 1933 N. Damen, Chicago 47, Ill. ARmitage 6-7308

Dmeter Mfg. Co., Inc., P. O. Box 83, Yonkers, N. Y. YOnkers 9-1770

Dole Valve Co., 6201 Oakton Street, Morton Grove, Ill.

Dolin Metal Products, Inc., 315 Lexington Ave., Brooklyn 16, N. Y. AP-7-5696

Dolinko & Wilkens, Inc., 1907 Summit Ave., Union City, N. J. UNion 7-6630

Dollinger Corporation, 81 Centre Park, Rochester 3, N. Y. BAker 5-9405

Donner Scientific Co., 888 Galindo St., Concord, Calif. MUlberry 2-6161

Dorne and Margolin, Inc., 29 New York Ave., Westbury, L. I., N. Y. EDgewood 4-3200

Dorsett Electronics Laboratories Inc., 119 W. Boyd St., P. O. Box 862, Norman, Okla. JEfferson 43750

Douglas Microwave Company Inc., 252 East Third St., Mount Vernon, N. Y. MO-86900

Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.

Dow Corning Corporation, Midland, Michigan TEmple 2-2371

Dragon Engineering Co., Inc., 13457 Excelsior Drive, P. O. Box 185, Norwalk, Calif. SP-13883
(See advertisement on page 78)

Drake Mfg. Co., 4626 No. Olcott, Harwood Heights, Chicago 31, Ill. UN 7-7227
(See advertisement on page 174)

Dressen-Barnes Corp., 250 No. Vinedo Ave., Pasadena, Calif. SYcamore 5-7731

Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J. HUmboldt 3-5550

Drying Systems Co., 1300 Foster Ave., Chicago 40, Ill. ARdmore 1-9100

Dryomatic Corp., 806 N. Fairfax St., P. O. Box 591, Alexandria, Va. KIng 9-3060

Du-Co Ceramics Company, Box 278, Saxonburg, Pa. FL-2-1511

Ducommun Co., M., Dept. IN, 580 Fifth Ave., New York 36, N. Y. PLaza 7-2540
(See advertisement on page 216)

DuKane Corp., St. Charles, Ill. Telephone 2300

DuMont Labs., Inc., Allen B., 750 Bloomfield Ave., Clifton, N. J. PRescott 3-2000
West Virginia Representative
Electronic Specialty Co.
Delaware Ave. at Randolph St., Charleston 2, W. Va. DIckens 3-5656

Dumore Company, 1300 Seventeenth Street, Racine, Wis. MElrose 3-8221

Dunham-Bush, Inc., Brunner Div., 179 South St., West Hartford 10, Conn. CHapel 9-8671

Dunlee Corporation, 1023 S. Prahack Road, Bellwood, Ill. COlumbus 1-6931

Dunn Engineering Associates, Inc., 225 O'Brien Highway, Cambridge 41, Mass. UNiversity 4-6700

du Pont de Nemours & Co. (Inc.), E. I., Photo Products Dep't, Wilmington 98, Del.

Durakool, Inc., 1010 North Main St., Elkhart, Ind.

Duralab Equipment Corp., 979 Linwood St., Brooklyn 8, N. Y. NI 9-0581

Durant Mfg. Co., 1914 N. Buffum St., Milwaukee 1, Wis. LOcust 2-5035

Dwyer Mfg. Co., F. W., P. O. Box 373, Michigan City, Ind. TRiangle 5374, Chicago SE-3-7883
(See advertisement on page 42)

Dychro Corporation, 49 Walnut Street, Wellesley 81, Mass. CEdar 7-0606

Dymec, A Division of Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif. DA 6-1755

Dyna-Empire, Inc., 1075 Stewart Ave., Garden City, N. Y. Pioneer 1-2700
(See advertisement on page 112)

Dynair Electronics, Inc., 7344 Broadway, Lemon Grove, Calif. HOpkins 6-4167

Dynamatic Div., Eaton Mfg. Co., 3122 14th Ave., Kenosha, Wis. OL 7-6171

Dynamatrics Corp., Northwest Industrial Park, Burlington, Mass. BRowning 2-1600
(See advertisement on page 39)

Dynamic Controls Company, 2225 Massachusetts Ave., Cambridge 40, Mass. TR-6-3700

Dynamic Gear Co. Inc., 175 Dixon Ave. Amityville, L. I., N. Y. AM 4-4788

Dynamic Instrument Co., Inc. (See Dynisco)

Dynamic Instrument Corp., 59 New York Ave., Westbury, L. I., N. Y. EDgewood 3-1606

Dynamics Instrumentation Co., 583 Monterey Pass Road, Monterey Park, Calif. CUmberland 32773

Dynamics Research Corp., 23 Montvale Ave., Stoneham 80, Mass. Stoneham 6-3900

Dynapar Corp., 5150 Church St., Skokie, Ill. ORchard 4-6655
Representative—S. Calif., Ariz., N. Mex.
DynaSales Company
1226 S. Atlantic Blvd., Los Angeles 22, Calif.
ANgelus 8-1175

Dynatran Electronics Corp., 178 Herricks Road, Mineola, N. Y. PIoneer 1-4141

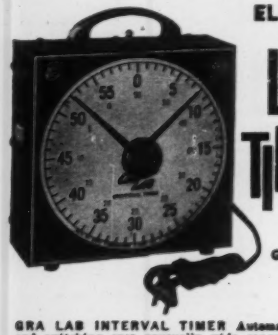
Dynatronics, Inc., P. O. Box 2546, Hiway 17-92 North, Orlando, Fla. MIdway 7-5200

Dyneers, P. O. Box 58, Chatham, N. J.

Dynex Inc., 170 Eileen Way, Syosset, N. Y. WAlnut 1-2200

Dynisco, Inc., 42 Carleton St., Cambridge 42, Mass. UNiversity 4-7280
(See advertisement on page 41)
Rep—Ohio, Indiana, Kentucky
Forrest C. Valentine, Inc.
511 Ft. Wayne Bank, Ft. Wayne, Ind.
Anthony 9122
12417 Cedar Rd., Cleveland Hgts. 6, Ohio
FA-1-0286

Dytronics Company, P. O. Box 3476, Columbus 14, Ohio. AM-3-0899



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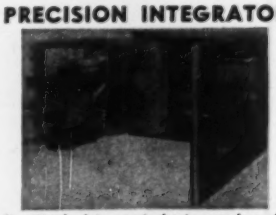

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EMP Electronics Research Laboratories, Inc., 3131 No. 29th Ave., Phoenix, Ariz. ALpine 8-2462

ESC Corp., 534 Bergen Blvd., Palisades Park, N. J. Windsor 7-0400

E-T-A Products Co. of America, 6284 No. Cicero Ave., Chicago 46, Ill. KIldare 5-1553

ETC Incorporated, 990 E. 67th Street, Cleveland 3, Ohio EN-1-3144

E & W Optical Co., 2406 E. Hennepin, Minneapolis 13, Minn. FR 1-9864

Eagle Signal Co., Div. The Gamewell Co., 202 20th St., Moline, Ill. Moline 2-5571

Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.

Eastern Industries, Inc., 190 Skiff St., Hamden 14, Conn. CH 8-3841

Eastern Reproductions Corp., 1250 Main St., Waltham 54, Mass. TW 2-8166

Eastern Specialty Co., 3617 No. 8th St., Philadelphia 40 Pa. BAldwin 8-6500

Eastern Technical Associates, Inc., Main St., N. Acton, Mass. CO-3-7719

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. LO 2-6000

Eberline Instrument Corp., 805 Early, Santa Fe, N. Mex. YUcca 21881

Ebert Electronics Corp., 212-26 Jamaica Ave., Queens Village 28, N. Y. SPruce 6-1800
(See advertisement on page 177)

EBEX 1015 Atkin Ave., Salt Lake City 6, Utah

Eclipse Fuel Engineering Co., Combustion Div., 1100 Buchanan St., Rockford, Ill. WOodland 8-3751

Edal Industries, Inc., 4 Short Beach Rd., East Haven 12, Conn. HO 7-2591

Eder Engineering Co., Inc. 1568 S. 1st St., Milwaukee 4, Wis. EVergreen 3-3900

Eder Instrument Co. Inc., 2293 N. Clybourn Ave., Chicago 14, Ill. EAstgate 7-2131

Edgerton, Germeshausen & Grier, Inc., 160 Brookline Ave., Boston 25, Mass. COpley 7-9700

Edison Industries, T. A., Instrument Div., McGraw Edison Co., 100 Lakeside Ave., W. Orange, N. J. ORange 2-6800

Editape Company, 32 Central Parkway, Huntington, L. I., N. Y. HAmilton 1-0929

Edmund Scientific Co., 101 E. Gloucester Pk., Barrington, N. J. LIncoln 7-3488

Edray Products Co., 480 Lexington Ave., New York 17, N. Y. YUkon 6-4477

Edward Valves, Inc., Sub. of Rockwell Mfg. Co., 1200 W. 145th St., East Chicago, Ind. EXport 7-3231

Edwards Co., Inc., 90 Connecticut Ave., Norwalk, Conn. TEmple 8-8441

Efcon, Inc., Patterson Place, Roosevelt Field, Garden City, N. Y. Pioneer 1-4200

Eicor Div. of The Scranton Corp., 4059 W. North Ave., Chicago 39, Ill. HUmbolt 6-2060

Eitel-McCullough, Inc., 301 Industrial Way, San Carlos, Calif. LYtell 1-1451

El Products Corp., P. O. Box 41, New York 63, N. Y. KI-8-3948
(See advertisement on page 217)

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Elcor, Inc., 1225 W. Broad St., Falls Church, Va. JEfferson 3-8850

Eldorado Electronics, 2821—10th Street, Berkeley 10, Calif. TH-1-4613

Electra Manufacturing Co., 4051 Broadway, Kansas City 11, Mo. WEstport 1-6864

Electric Autolite Co., Champlain St., Toledo 1, Ohio CHerry 3-3131
(See advertisement on page 66)

Electric Design & Mfg. Co., 8th & Jefferson, Burlington, Iowa. PLaza 2-7685

Electric Eye Equipment Co., 1938 E. Fairchild St., Danville, Ill. Telephone 6-6500

Electric Hotpack Co., Inc., 5053 Cottman St., Philadelphia 35, Pa. DE 3-1700

Electric Indicator Co. Inc., Camp Avenue, Stamford, Conn. DAvis 2-1671

Electric Regulator Corp., Pearl Street, Norwalk, Conn. VIctor 7-2401

Electric Tachometer Corp., 68th & Upland Sts., Philadelphia 42, Pa. SAratoga 6-7723

Electrical Industries Div., Philips Electronics, Inc., 691 Central Ave., Murray Hill, N. J. CHestview 7-4300

Electrical Windings, Inc., 2015 No. Kolmar Ave., Chicago 39, Ill. BEImont 5-3340

Electro Development Co., 14701 Keswick St., Van Nuys, Calif. STate 6-3660 TRiangle 3-1850
(See advertisement on page 200)

Electro Devices Inc., 580 Main St., Wilmington, Mass. PArkview 9-2851

Electro Devices, Inc., 4648 Easton Ave., St. Louis 13, Mo. JEfferson 1-2075

Electro Engineering Works, 401 Preda Street, San Leandro, Calif. LOckhaven 9-3226

Electro Impulse Lab., Inc., 208 River Street, Red Bank, N. J. SH-1-0404

Electro Instruments, Inc., 3540 Aero Court, San Diego 11, Calif. BRowning 7-6590

Electro Metric Co., 681 19th Street, Manhattan Beach, Calif. FRontier 4-7059

Electro Networks, Inc., 1920 Park Street, Syracuse 8, N. Y. GRanite 1-9193

Electro Powerpacs, Inc., 5 Hadley St., Cambridge 40, Mass. THowbridge 6-9220

Electro Precision Corp., P. O. Box 669, Arkadelphia, Ark. CHapel 6-2272

Electro Products Laboratories, Inc., 4501 N. Ravenswood Ave., Chicago 40, Ill. LOngbeach 1-1707

Electro Radiation, Inc., 2200 Colorado Ave., Santa Monica, Calif. UPton 0-9674

Electro Switch Corp., King Avenue, Weymouth 88, Mass. EDgewater 5-5200

Electro-Autosizing Machine Corp., 7 William St., Closter, N. J. POplar 8-5540

Electrodata Div., Burroughs Corp., 460 Sierra Madre Villa, Pasadena, Calif. BYan 1-6471

Electrodynamic Instrument Corp., 1841 Old Spanish Trail, Houston 25, Texas JA-6-3761

Electro-Flex Heat, Inc., 83 Woodbine St., Hartford 6, Conn. CHapel 6-5413

Electroid Corporation, P. O. Box 442, 95 Progress Street, Union, N. J. MU-6-8290-91

Electrol, Inc., Dept. 9, 9000 West Pico Blvd., Los Angeles 35, Calif. BRadshaw 2-6010

Electro-Logic Corp., 515 Boccaccio Ave., Venice, Calif. EXbrook 6-3137

Electromath Corp., 115 Pleasant Ave., Roosevelt, Long Island, N. Y. MAyfair 3-3500

Electro-Measurements, Inc., 7534 S.W. Macadam, Portland 19, Oregon. CHerry 6-3332

Electro-Mec Laboratory, Inc., 47-51 33rd St., Long Island City 1, N. Y. STillwell 6-3402

Electro-Mechanical Research, Inc., P. O. Box 3041, Sarasota, Fla. Ringling 6-1148

Electro-Mechano Co., 261 Erie St., Milwaukee 2, Wis. BR-2-4050
(See advertisement on page 217)

Electro-Medical Laboratory, Inc., So. Woodstock 7, Vt. WOodstock 340

Electro-Miniatures Corp., 600 Huyler St., So. Hackensack, N. J. HUbbard 9-7770

Electron Arc Inc., 244 Broad St., Lynn, Mass.

Electronic Applications, Inc., 194 Richmond Hill Ave., Stamford, Conn. DA 5-1574
(See advertisement on page 118)

Electronic Associates, Inc., Long Branch, N. J. CApital 9-1100

Electronic Communications, Inc., 1501-72nd St., North, St. Petersburg 10, Fla. DI-5-9301

Electronic Computer Co., 618 Maple St., Conshohocken, Pa. TAylor 8-3967

Electronic Control Corp., 1573 East Forest, Detroit 7, Mich. TEmple 26425

Electronic Controls Inc., 86 Magee Ave., Stamford, Conn. DAvis 5-3524

Electronic Development Corp., 423 W. Broadway, Boston 27, Mass. ANdrew 8-3534

Electronic Engineering Co. of California, 1601 East Chestnut Ave., Santa Ana, Calif. Kimberly 7-6501

Electronic Fabricators, Inc., 682 Broadway, New York 12, N. Y. SPringhill 7-4900

Electronic Heat Treating & Mfg., Inc., 181 N. Getty St., Muskegon, Mich. PA-2-3249

Electronic Instrument Co., Inc., 33-00 Northern Blvd., Long Island City 1, N. Y. STillwell 6-8700

Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J. LIberty 2-0300

Electronic Measurements Corp., 625 Broadway, New York 12, N. Y. GRamercy 5-6610

Electronic Parts Mfg. Co., Inc., 508-10—25th St., Union City, N. J. UN. 5-4028

Electronic Processes Corp. of Calif., 436 Bryant St., San Francisco 7, Calif. EXbrook 7-3681

Electronic Systems Development Corp., 1434 E. Main Street, Ventura, Calif. MIller 8-1827

Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa. CHestnut Hill 7-4800

Electronics International Co., 145 W. Magnolia Blvd., Burbank, Calif. VI 9-2481

Electrons, Inc., 127 Sussex Ave., Newark 3, N. J. HU. 2-5977

Electro-Pulse Inc., 6711 South Sepulveda Blvd. Los Angeles 45, Calif. ORegon 8-2244

Electrosnap Corp., 4215 W. Lake St., Chicago 24, Ill. VAnburen 6-3100

Electrosolids Corp., 6352 Bellingham Road, North Hollywood, Cal. TRiangle 7-2926

Electrovert, Inc., 124 E. 40th St., New York 16, N. Y. OXford 7-8396

Elgin National Watch Co., Abrasives Div., 107 National St. Elgin, Ill. SHerwood 2-3300

Elgin National Watch Co., Electronics Div. 2435 N. Naomi St., Burbank, Calif. Victoria 9-1446

Elion Instruments, Inc., 430 Buckley St., Bristol, Pa. WI-9-2700

Ellis Associates, 67 Lincoln Ave., Pelham, N. Y. PElham 8-3300
(See advertisement on page 56)

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M. C. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa. WA 2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3229

Emcor-Ingersoll Products Div., Borg-Warner Corp., 630 Congdon Ave., Elgin, Ill. SHerwood 1-3490

Emerson Apparatus Co., 181 Tremont Street, Melrose 76, Mass. NOrmandy 5-2445

Emery Co., A. H., Pine St., New Canaan, Conn. WO-6-9595
(See advertisement on page 84)

Empire State Laboratories, Inc., 2608 Merrick Road, Bellmore, N. Y. SUnset 5-4888

Empro Manufacturing Co., 9143 Pendleton Pike, P. O. Box 26064, Lawrence 26, Ind. Liberty 6-6451
(See advertisement on page 119)

Endevco Corporation, 161 East California Blvd., Pasadena, Calif. SYcamore 3-0271

Energy Kontrols, Inc., 11 So. First St., Geneva, Ill. GEneva 7150

Engelhard Industries, Inc., 113 Astor St., Newark, N. J. BIgelow 2-2700

Engineered Electronics Co., 1441 East Chestnut Ave., Santa Ana, Calif. KImberly 7-5651

Engineered Magnetics, 13041 Cerise Ave., Hawthorne, Calif. OR-8-7607

Engis Equipment Co., 431 S. Dearborn St., Chicago 5, Ill. HArrison 7-3223

Engler Instrument Co., 250 Culver Ave., Jersey City 5, N. J. HEnderson 4-6500

Entron, Inc., P. O. Box 287, Bladensburg, Md. APpleton 7-9585

Environmental Equipment Corp., 369 Linden St., Brooklyn 27, N. Y. VAndyke 1-9872

Epic, Inc., 150 Nassau St., New York 38, N. Y. DIgby 9-2470

Eppley Laboratory, Inc., 12 Sheffield Ave., Newport, R. I. VIking 7-1020
(See advertisement on Inside Front Cover, 193)

Epsco, Inc., 275 Massachusetts Ave., Cambridge, Mass. UNiversity 4-4950

Epsco West, a Div. of Epsco Inc., 240 E. Palais Rd., Anaheim, Calif.

Ercona Corp., 16 West 46 Street, New York 36, N. Y. CIrcle 5-3840

Erdco Engineering Corp., 136 Official Road, Addison, Ill. Kingswood 3-6733

Erie Manufacturing Co., 4000 South 13th St., Milwaukee 21, Wis.

Erie Pacific, Div. of Erie Resistor Corp., 12932 S. Weber Way, Hawthorne, Calif. ORegon 8-5418

Erie Resistor Corp., 644 W. 12th St., Erie 6, Pa. GLendale 6-8592

Erlen Manufacturing Co., 1945 Grove Drive, Erie, Pa. Telephone 4-0133

Ertel Engineering Corp., Kingston 60, N. Y.

Erwood Inc., 1770 W. Berteau Ave., Chicago 13, Ill. BI 8-0622

Escon, Incorporated—Subsidiary of Glass-Tite Industries, 725 Branch Ave., Providence, R. I. TEmple 1-6800

Essex Electronics, Div. Nytronics, Inc., 550 Springfield Ave., Berkley Heights, N. J. CHestnut 3-9300

Essex Wire Corp., 1601 Wall Street, Fort Wayne, Ind. EAstbrook 6311

Esterbrook Pen Co., Delaware Ave. & Cooper St., Camden 1, N. J.

Esterline-Angus Co., Dept. G, P. O. Box 596, Indianapolis 6, Ind. CHapel 4-3318
(See advertisement on page 93)

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Amarillo, Texas
C. B. Anderson Electric Company
P. O. Box 1836. DRake 6-6442

Atlanta 19, Georgia
The Gearhart Company
The Gearhart Bldg. CEdar 3-4431

Birmingham 5, Alabama
The Gearhart Company
512 North 18th St. ALpine 2-7419

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L. W. Kirmes
P. O. Box 192. SToneham 6-1410

Buffalo 17, New York
The Robert F. Lamb Co.
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Calgary Alberta, Canada
George M. Fraser, Ltd.
815—25th Ave., N.W. AVenue 9-7897

Charlotte 2, North Carolina
Ranson, Wallace & Co.
116½ East Fourth St. EDison 4-4244

Chicago 5, Illinois
Murphy & Dicker
537 S. Dearborn St. HArrison 7-7953

Cincinnati 24, Ohio
G. H. Armstrong Co.
P. O. Box 25, Station K. KIrby 1-3692

Cleveland 15, Ohio
The L. H. Waldrip Company
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Dallas 20, Texas
Kemp Engineering Co.
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Mountain States Machinery Company
1526 Blake St. CHerry 4-7421

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Deco Engineering Products
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The Eads Company
P. O. Box 13071. JAckson 6-1646

Indianapolis 4, Ind.
C. D. Arnold
911 N. Pennsylvania St. MElrose 4-3811

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8South 1-6545

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Brenner-Fiedler & Associates, Inc.
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Milwaukee 12, Wis.
M. F. Jacobs Co.
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Minneapolis 3, Minn.
Pinkney & Hine Company
1925 Nicollet Ave. FEderal 8-0523

Montreal, Que., Canada
W. Hobson & Associates
1024 Notre Dame St., Lachine MElrose 7-1231

New Orleans 25, Louisiana
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New York
T. A. Kenny
P. O. Box 266. Summit, N. J. CHestnut 3-7090

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P. O. Box 761. VIctor 3-7718

Omaha 2, Nebraska
Deco Engineering Products
712 South 24th St. 342-4111

Orlando, Florida
The Gearhart Company
2513 Catalina Drive. GArden 2-8024

Philadelphia 2, Pa.
Linn O. Morrow & Son
Schaff Building. LOcust 7-6431

Phoenix, Arizona
J. E. Redmond Supply Co.
P. O. Box 869. ALpine 4-8471

Pittsburgh 16, Pa.
W. H. Bollinger
P. O. Box 8088. LOcust 1-2340

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1001 S. E. Water Ave. BElmont 4-7437

St. Louis 1, Missouri
C. B. Fall Company
317 N. 11th St., Room 1003. CHestnut 1-2433

Salt Lake City 15, Utah
Shaffer & Nelson, Inc.
1415 S. Main St., Rm. 201. HUnter 4-3382

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DIamond 2-4147

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Shaffer & Nelson, Inc.
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Shaffer & Nelson, Inc.
P. O. Box 198. FAirfax 7-9528

Syracuse
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4505 E. Genesee St. DeWitt 14
GIbson 6-3330

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George M. Fraser, Ltd.
1554 Yonge St. WAlnut 4-9492

Tulsa 3, Oklahoma
C. B. Anderson Electric Company
712 Oil Capitol Bldg. GIbson 7-1123

Washington, D. C.
The Hildenbrand Company
P. O. Box 1060. Fairfax Virginia
CRescent 3-2334

Etching Corp. of Calif., 1208 Howard St., San Francisco 3, Calif. MArket 1-7670

Eugene Engineering Co., Inc., 1217 Hyde Park Ave., Boston, 36, Mass. EMpire 1-7000

Ever Ready Thermometer Co., 116 Wooster St., New York 12, N. Y. CAnal 6-4595

Ewald Instruments, Box 124 B, Kent, Conn. WAlker 7-3278

Exact Weight Scale Co., 551 East Town St., Columbus 15, Ohio. CA 4-6187

Exactel Instrument Co., 185 Evelyn Ave., Los Altos, Calif. YOrkshire 8-6558
(See advertisement on page 36)

Excellex Electronics Inc., 88-06 Van Wyck Expressway, Jamaica 18, N. Y. AXtel 1-3585

Exline Engineering Co., 107 W. 2nd., Tulsa 3, Okla. GIbson 7-4481

F

FAE Instrument Corp., 42-61 Hunter St., Long Island City 1, N. Y. STillwell 6-4959

FXR, Inc., 2 5-26 50th St., Woodside 77, N. Y. RAvenswood 1-9000 NY-4-3742

Fafnir Bearing Co., 37 Booth St., New Britain, Conn. BAldwin 5-3151

Fairchild Camera & Instrument Corp., Robbins Lane, Syosset, N. Y. WEIls 1-4500

Fairchild Controls Corp., Components Div., 225 Park Ave., Hicksville, L. I., N. Y. WEIls 8-5000

Fairchild Semiconductor Corp., 545 Whisman Rd., Mountain View, Calif. YOrkshire 8-8161

Fairfield Engineering Corp., 114 Manhattan St., Stamford, Conn. DA 5-1561

Falcon Alarm Co., Inc., 243 Broad St., Summit, N. J. CHestview 3-5640

Falstrom Company, Falstrom Court, Passaic, N. J. PR 7-0613

Farmer Electric Products Co., Inc., 2300 Washington St., Newton Lower Falls 62, Mass. DExter 2-4343
(See advertisement on page 173)

Farris Engineering Corp., 400 Commercial Ave., Palisades Park, N. J. WIndsor 4-5300
Rep—Pittsburgh, Pa. Charleston, W. Va.
Fogleman Co., Inc.
3849 Willow Ave., Pittsburgh 34, P. LE-1-4005
510 "C" St., S. Charleston 3, W. Va. RI-4-9401

Fast & Co., John E., subsidiary of the Victoreen Instrument Co., 3590 N. Elston Ave., Chicago 18, Ill.

Fawler-Brost Co., 111 North Wacker Drive, Chicago 6, Ill. FI-6-0777

Fecker, J. W., Division American Optical Co., 6592 Hamilton Ave., Pittsburgh 6, Pa. EMerson 1-7617

Federal Pacific Electric Co., 50 Paris St., Newark 1, N. J.

Federal Screw Products Inc., 3917 N. Kedzie Ave., Chicago 18, Ill. IRving 8-5744
(See advertisement on page 198)

Federal Shock Mount Corp., Div. of Korfund Co., Inc., 1060 Washington Ave., New York 56, N. Y. WY 3-0400

Federal Tool Engineering Co., 1384 Pompton Ave., Cedar Grove, N. J. CLifford 6-5300

Federated Electronics Inc., 134-20 Jamaica Ave., Jamaica 18, N. Y. OL-83300

Feedback Controls, Inc., 8 Erie Drive, Natick, Mass. OLympic 3-3441

Feller Engrg. & Mfg. Co., 9510 No. Lawler, Skokie, Ill. COrnelia 7-8280

Fellows Gear Shaper Co., 78 River St., Springfield, Vt. TUrner 5-2131

Felsenthal & Sons, Inc., G., 2500 North Kedzie Ave., Chicago 18, Ill. KEystone 9-6661

Femco, Inc., P. O. Box 32, Irwin, Pa. UNderhill 3-3200

Fenwal Inc., 3618 Pleasant St., Ashland, Mass. TRinity 5-6111
(See advertisement on page 187)

Fenwal Electronics, Inc., 51 Mellen St., Framingham, Mass. TR-2-5110
(See advertisement on page 60)

Ferguson Company, 814 Ridgely St., Baltimore 30, Md. LExington 9-5202

Ferguson Hille & Assoc. Inc., 542 S. Dearborn St. Chicago 5, Ill. WA 2-1808

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15	35	55	75	95	115	135	155	175	195	215	235	255	275	295	315	335	355	375	395
16	36	56	76	96	116	136	156	176	196	216	236	256	276	296	316	336	356	376	396
17	37	57	77	97	117	137	157	177	197	217	237	257	277	297	317	337	357	377	397
18	38	58	78	98	118	138	158	178	198	218	238	258	278	298	318	338	358	378	398
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3	23	43	63	83	103	123	143	163	183	203	223	243	263	283	303	323	343	363	383
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5	25	45	65	85	105	125	145	165	185	205	225	245	265	285	305	325	345	365	385
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8	28	48	68	88	108	128	148	168	188	208	228	248	268	288	308	328	348	368	388
9	29	49	69	89	109	129	149	169	189	209	229	249	269	289	309	329	349	369	389
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Fielden Electronics Co., Huntington, Long Island, New York
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Film Capacitors, Inc., 3400 Park Ave., New York 56, N. Y. CYpress 2-5180

Filmolm Corporation, 48 West 25th St., New York 10, N. Y. WAtkins 4-6605

Filtors, Inc., 30 Sagamore Hill Drive, Port Washington, N. Y. Port Washington 7-8220

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Fisher Scientific Co., 711 Forbes Ave., Pittsburgh 19, Pa. EXpress 1-1330

Fish-Schurman Corp., 70 Portman Road, New Rochelle, N. Y. NE 6-1300
(See advertisement on page 161)

Fleetwood Laboratories, Inc., 300 Victory Blvd., New Rochelle, N. Y. BEverly 5-0631

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Flexonics Corp., subsidiary of Calumet & Hecla, Inc., 1337 S. 3rd Ave., Maywood, Ill. FIlmore 3-8000

Flight Components, 2035 Calumet Street, Clearwater, Florida Telephone 50 6801

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Flow Corp., 85 Mystic St., Arlington 74, Mass. Mission 8-6740

Flow Measurements Corp., 10506 Wheatley St., Kensington, Md. LO 4-0122

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Fluid Mechanisms Inc., 151 Marine St., Farmindale, N. Y. MYrtle 4-3575

Fluidynamics, Inc., 1853 So. 8th Ave., Monrovia, Calif. HI-6-8471

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Ford Instrument Company Div. of Sperry Rand Corp., 31-10 Thomson Ave., Long Island City 1, N. Y. STillwell 4-9000

Forma Scientific Inc., Box 649, Marietta, Ohio FRontier 3-4763

Forro Scientific Co., 833 Lincoln St., Evanston, Ill. DA-8-5729

Foster Engineering Div. of General Controls Co., Warwick Industrial Park, Warwick, R. I. STuart 1-6200

Foxboro Co., Foxboro, Mass. CApitol 7-0866

Freed Transformer Co., Inc., 1718 Weirfield St., Brooklyn 27, N. Y. EVergreen 6-1300
(See advertisement on pages 110, 119)

Friden, Inc., 2350 Washington Ave., San Leandro, Calif.

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Fuller Co., 124 Bridge St., Catasauqua, Pa. COngress 4-2941

Fulton Sylphon Div., Robertshaw-Fulton Controls Co., P. O. Box 400, Knoxville 1, Tenn. Telephone 4-1641

Furnas Electric Co., 1000 McKee St., Batavia, Ill. TRemont 9-5410

Futurecraft Corporation, 1717 North Chico Ave., El Monte, Calif. CUmberland 3-2113

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GPS Instrument Co., Inc., 180 Needham St., Newton 64, Mass. DEcatur 2-8110

GRS Corp., 9601 River St., Schiller Park, Ill. OHange 8-2727

G. S. Equipment Co., 15585 Brookpark Rd., Cleveland 35, Ohio CLearwater 2-4770

G-V Controls Inc., Okner Parkway, Livingston, N. J. WYman 2-6200

Gaertner Scientific Corp., 1208 Wrightwood Ave., Chicago 14, Ill.

Gagne, Associates, A. F., 50 Wall St., Binghamton, N. Y. RA-3-7510

Galilee & Son, S. P., 220 West Fifth Street, Los Angeles 13, Calif. MU-1347
(See advertisement on page 197)

Gamewell Company-A subsidiary of E. W. Bliss Co., 1238 Chestnut St., Newton Upper Falls 64, Mass. BIgelow 4-1240

Gap Instrument Corp., 116 E. Merrick Rd., Freeport, L. I., N. Y. FReeport 8-1040

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Garde Mfg. Co., 53 John St., Cumberland, R. I. Pawtucket 6-4200

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Gates Electronic Co., 1705 Taylor Ave., Bronx 60, N. Y. TYrone 2-6490
(See advertisement on page 114)

Gates Radio Co., 123 Hampshire St., Quincy, Ill. BA 2-8202.

Gatti, Inc., Aurele M., 527 Tindall Ave., Trenton 9, N. J. EXport 6-1577

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(See advertisement on page 146)

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(See advertisement on page 126)

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Carkeek Engineering Co., Inc.
285 S. Euclid Ave., Pasadena, Calif.
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General Controls Co., 801 Allen Ave., Glendale 1, Calif. VIctoria 9-2181

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Geonator Corporation, 315 Tudor Lane, Manassas, Va. EMpire 8-2101

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(See advertisement on page 136)

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(See advertisement on page 197)

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Gow-Mac Instrument Co., 100 Kings Road, Madison 1, N. J. FRontier 7-3450
(See advertisement on page 32)

Gould Laboratories, North Delsea Dr., Pitman, N. J. LUther 9-5753

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(See advertisement on page 113)

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(See advertisement on page 196)

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(See advertisement on page 100)

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(See advertisement on page 45)

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(See advertisement on page 156)

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G. D. GUSTAFSON MFG. CO.,
29 E. Madison St., Chicago 2, Ill.
CIRCLE 383 ON READER-SERVICE CARD

Gustaveson, Inc., 8600 Chestnut St., Kansas City 32, Missouri JAckson 3-0816

Guthery Machine Tool Corp., 38-31 Crescent St., Long Island City 1, N. Y.

Gyra Electronics Corp., P.O. Box 184, LaGrange, Ill. FLeetwood 4-4644

Gyrex Corp., 3003 Pennsylvania Ave., Santa Monica, Calif. EXbrook 30462

H

H-B Instrument Co., American & Bristol Sts., Philadelphia 40, Pa. DA 9-9125

H & H Machine Co., Inc., Noble & Jackson Sts., Norristown, Pa. HBroadway 2-6453

H.J.J. Company, 268 Marlow Drive, Oakland 9, Calif. LOckhaven 2-1603
(See advertisement on page 193)

Hagan Chemicals & Controls, Inc., Hagan Center, P.O. Box 1346, Pittsburgh 30, Pa. WAlnut 2-3737
(See advertisement on pages 18, 20, 27, 42, 47, 53, 59, 61, 74, 96)

Hagen Mfg. Co., A Division of The Gamewell Co., 104 Walnut St., Baraboo, Wis. Telephone 1195

Haledy Electronics Co., 57 William St., New York 5, N. Y. WHitehall 3-3140

Haley, Inc., 310 East Imperial Highway, P. O. Box 546, El Segundo, Calif. EAstgate 2-2000 and SPring 2-2545

Hallamore Electronics Div. of Siegler Corp., 714 N. Brookhurst St., Anaheim, Calif. PRospect 4-1010

Hallikainen Instruments, 1361—7th St., Berkeley 10, Calif. LAndscape 6-1757

Hamilton Standard Div., Electronics Dept., 92 Main St., Broad Brook, Conn. NA-3-1621

Hamilton Tool Co., 9th St. at Hanover, Hamilton, Ohio TWinbrook 5-4351

Hamilton Watch Co., Industrial Div.; Precision Metals Div., Lancaster, Pa. EXpress 4-7161

Hamlin, Inc., 1316 Sherman Ave., Evanston, Ill. GReenleaf 5-8244

Hammel-Dahl Div., General Controls Co., Warwick Industrial Park, Warwick, R. I. STuart 1-6200

Hamner Electronics Co., Inc., P.O. Box 531, Princeton, N. J. PEnnington 7-1320

Hand & Sons Co., John E., Atlantic & Washington Aves., Haddonfield, N. J. HAddonfield 9-0480

Handicraft Tools, Inc., Div. of X-Acto, Inc., 48-41 Van Dam St., Long Island City 1, N. Y. EXeter 2-3333

Handley Inc., 12900 Panama St., Los Angeles 66, Calif. UPton 07950

Handy & Harman, 82 Fulton St., New York 38, N. Y.

Hankison Corp., Dept. CI, College & Pike, Canonsburg, Pa. SHerwood 5-1555
(See advertisements on page 17)

Hanovia Lamp Div., Engelhard Hanovia, Inc., 100 Chestnut St., Newark 5, N. J. BIgelow 2-2422

Hansen Co., Wm., 165 Silverbrook Ave., Niles, Mich. MU 3-8006

Hansen Mfg. Co. Inc., P.O. Box 23, Princeton, Ind.

Hanson Gorrill-Brian, Inc. 85 Hazel St., Glencove, N. Y. ORiole-6-7300

Harco Laboratories, Inc., 77 Olive, New Haven 7, Conn. STate 7-6701

Harder Co., Donald C., 2580 "K" St., San Diego 2, Calif. BEImont 9-8021

Hardwick, Hindle, Inc., 40 Hermon St., Newark 5, N. J. MArket 2-8200

Harris Refrigeration Co., 308 River St., Cambridge 39, Mass. UNiversity 4-4000

Harris Transducer Corp., a subsidiary of General Instrument Corp., P.O. Box 247, Woodbury, Conn. COngress 3-2116

Harrison Laboratories, Inc., 45 Industrial Rd., Berkeley Heights, N. J. CRestview 3-9123

Hart Manufacturing Co., 220 Bartholomew Ave., Hartford 1, Conn. JAckson 5-3491

Hartford Steel Ball Co., Inc., 12 Jefferson Ave., West Hartford, Conn. AD 3-1251

Hartman Electrical Mfg. Co., 175 North Diamond St., Mansfield, Ohio LA 4-1411

Harvey-Wells Electronics, Inc., B&D Div., 5168 Washington St., West Roxbury 32, Mass. FAirview 7-8000

Haskris Co., 6720 N. Lincoln Ave., Lincolnwood, (Chicago 45), Ill. COrnelia 7-3211

Hasler-Tel. Co., Inc., 30 Vesey St., New York 7, N. Y. WOrth 2-2831
(See advertisement on page 221)

SPEED CONTROL with THE HASLER INDICATOR

Chronometric Tachometer with separate reset button for cumulative readings

Type A 0-20000 R.P.M. or 0-6000 F.P.M.

Type B 0-2000 R.P.M. or 0-600 F.P.M.

Accuracy: ¼ of 1% of true SPEED

HASLER-TEL CO., INC.
30 Vesey St., New York 7, N. Y.
U. S. Distributors for
Hasler Speed Indicators since 1919

CIRCLE 384 ON READER-SERVICE CARD

Hass Instrument Corp., 6173 Branch Ave., Washington 28, D. C. HI 9-5454
(See advertisement on page 147)

Hassall, Inc., P.O. Box 2158, Westbury, Long Island, N. Y.
(See advertisement on page 162)

Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va. PArk 3-6531

Hathaway Instrument, Inc., 5800 E. Jewell, Denver 22, Colo. SKyline 6-8301

Haveg Industries, Inc., Plastics Park, Wilmington 8, Del. WIman 8-2271

Hawk Tool & Engrg. Co., Inc., Clarkston, Mich. WOodward 3-1007

Hayden Co., A. W., 228 No. Elm St., Waterbury 20, Conn. PLaza 6-4481
(See advertisement on page 73)

Haydon Co., A. W. (Calif.), 4060 Ince Blvd., Culver City, Calif. UPton 0-5461

Haydon Div., General Time Corp., 245 E. Elm St., Torrington, Conn. HUnter 9-3158

Haydon Instrument Co., 165 W. Liberty St., Waterbury 20, Conn. PLaza 6-2211

Haydon Switch, Inc., 536 So. Leonard St., Waterbury 20, Conn. PLaza 6-7441

Hayes, Inc., C. I., 800 Wellington Ave., Cranston 10, R. I. HOpkins 1-3400

Hays Corp., Michigan City 39, Ind., THiangle 2-5561

Hays Manufacturing Co., Automatic Controls Div., 801 W. 12th St., Erie, Pa. GL-2-3221

Hayward Scientific Glass Corp., 217 N. Magnolia Ave., Whittier, Calif. OXford 58213 and 51214

Healy-Ruff Co., 2255 University Ave., St. Paul 14, Minn. MIdway 6-2701

Heath Company a subsidiary of Daystrom Inc., Hilltop Rd., Benton Harbor, Mich. YU-3-3961

Heinze Electric Co., 685 Lawrence St., Lowell, Mass. GL 77556

Heise Bourdon Tube Co., Inc., Brook Road, Newtown, Conn. GArden 64406
(See advertisement on page 43)

Heitz, Inc., Karl, 480 Lexington Ave., New York 17, N. Y. YUkon 6-4920

Helicoid Gage Div., American Chain & Cable Co., Inc. 929 Connecticut Ave., Bridgeport 2, Conn. EDison 5-0161

Heller Co., Gerald K., 1819 Industrial Road, P.O. Box 4426, Las Vegas, Nev.

Hellige, Inc., 877 Stewart Ave., Garden City, N. Y. PIoneer 1-3300

Henderer's Sons, A. L., 639 Maryland Ave., Wilmington 99, Del. OLympia 2-1014

Henry Valve Co., 3215 North Ave., Melrose Park, Ill. FIllmore 4-1100

Henson Co., Fred C., 2311 E. Colorado Blvd., Pasadena 8, Calif. SY-2-2311

Hermes Electronics Co., 75 Cambridge Parkway, Cambridge 42, Mass. UN-4-7200

Hermetic Seal Corporation, 42 River Road, No. Arlington, N. J. WYman 8-8080

Herron Optical Co., 9117 S. Main St., Los Angeles 3, Calif. PLymouth 4-2943

Hetherington & Berner Inc., 701 Kentucky Ave., Indianapolis 7, Ind.

Hevi-Duty Electric Co., P.O. Box 563 Milwaukee 1, Wis. UPtown 1-9100

Hewlett-Packard Co., 1501 Page Mill Rd., Palo Alto, Calif. DAvenport 6-7000

Hewson Co., Inc., 443 Broad St., Newark 2, N. J. HUmboldt 3-3000

Hexacon Electric Co., 161 W. Clay Ave., Roselle Park, N. J. CHestnut 5-6200

Hickok Electrical Instrument Co., 10519 Dupont Ave., Cleveland 8, Ohio. LIberty 1-8060

High Accuracy Products Corp., 149 West 1st St., Claremont, Calif. NAtional 4-3676

High Pressure Equipment Co. Inc., 1222 Linden Ave., Erie, Pa. TE 52028

High Temperature Instruments Corp., 143 Bala Ave., Bala-Cynwyd, Pa. MOhawk 4-5985

High Vacuum Equipment Corporation subsidiary of Robinson Technical Products, Inc., 2 Churchill Rd., Hingham, Mass. Riverview 9-2430

High Voltage Engineering Corp., S. Bedford St., Burlington Mass. BR-2-1313

Hill & Co., E. Vernon, P.O. Box 189, Lake Geneva, Wis. CHestnut 8-3729

Hillburn Electronic Prods. Co., 55 Nassau Ave., Brooklyn 22, N. Y. STag 2-3875

Hills-McCanna Co., 4595 W. Touhy Ave., Chicago 46, Ill. ORchard 4-7080

Hirschmann Co., Inc., Carl, 30 Park Ave., Manhasset, L. I., N. Y. MAnhasset 7-5300

Hi-Spec Electronics Corp., 7328 Ethel Ave., No. Hollywood, Calif. POplar 5-5075

Hitachi, Ltd., Tokyo, Japan
(See advertisement on page 109)

Hitemp Wires, Inc., 1200 Shames Drive, Westbury, L.I., N. Y. EDgewood 2-4600

Hobbs Corp., John W., Div. Stewart-Warner Corp., Yale & Ash Sts., Springfield, Ill. Lakeside 6-7533

Hoffman Electronics Corp., Semiconductor Div., 930 Pitner Ave., Evanston, Ill. UNiversity 9-2400, 1001 N. Arden Drive, El Monte Calif. CU-3-7191

Hoffman Laboratories Div., Hoffman Electronics Corp., 3740 So. Grand Ave., Los Angeles 7, Calif. RIchwood 7-4488

Hoke, Inc., 1 Tenakill Park, Cresskill, N. J. LOwell 8-9100
Rep—N. Y. State (except Metro), N. Pa.
The Carl A. Pearson Co., Inc.
232 Winton Rd. N., Rochester 10, N. Y.
BUtler 8-2526

Hoke, Inc., 1 Tenakill Park, Cresskill, N. J. LOwell 8-9100
Rep—Pittsburgh, Pa., Charleston, W. Va.
Fogleman Co., Inc.
3349 Willow Ave., Pittsburgh 34, Pa. LE-1-4005
510 "C" St., S. Charleston 3, W. Va. RI-4-8401

Holt Instrument Laboratories, P.O. Box 230, Oconto, Wis. Telephone 163 and 164

Holtzer-Cabot Div., National Pneumatic Co., Inc., 125 Amory St., Boston 19, Mass. JAmaica 4-7000

Hommel Co., O., P.O. Box 475, Pittsburgh 30, Pa. WAlnut 1-1194

Hoover Electric Co., 2100 S. Stoner Ave., Los Angeles 25, Calif. BR-2-3125

Hoover Electronics Co., 110 W. Timonium Rd., Timonium, Md. VAlley 5-5200

Horswell Co., Mendham, New Jersey
(See advertisement on page 199)

Hoskins Mfg. Co., 4463 Lawton Ave., Detroit 8, Mich. TYler 5-2860
(See advertisement on page 206)

Houston Instrument Corp., 4950 Terminal Ave., Bellaire, Texas, P.O. Box 22234, Houston 27, Texas Mohawk 7-7405
(See advertisement on page 122)

Houston Magnetic Products, Inc. (Subsidiary of Houston Instr. Corp.), 1514 Foley St., Houston 24, Tex. HOmestead 8-2696

Howard Industries Incorporated, 1760 State St., Racine, Wis. MElrose 2-2731

Howe Scale Co., Rutland, Vt. PRospect 5-5541

Howell Instruments Co., 3479 W. Vickery Blvd., Fort Worth 7, Texas EDison 6-7411

Hoyt Electrical Instrument Works, see Burton-Rogers Co.

Hub-Pot, Inc., 13827 Saticoy St., Van Nuys, Calif. STate 2-2300

Hufco Industries, 2815 W. Olive Ave., Burbank, Calif. VIctoria 9-2118

Hughes Co., Inc., Kenneth E., 4808 Bergenline Ave., Union City, New Jersey. UNion 7-3204
(See advertisement on page 158)

Hughes, Industrial Systems Division, 5261 West Imperial Highway, Los Angeles 45, Calif. ORchard 0-1515

Hughes Products, International Airport Sta., Los Angeles 45, Calif. ORchard 0-1515

Hulcher Company, Inc., Charles A., 911 "G" St., Hampton, Va. Newport News CHestnut 56190

Humphrey, Inc., 2805 Canon St., San Diego 6, Calif. AC-31654

Humphrey Products Div., General Gas Light Co., 302 N. Park St., Kalamazoo, Mich. FI 2-0127

Hunt Valve Co., Division of International Basic Economy Corp. (IBEC), 1913 East State St., Salem, Ohio ED-7-9525

Hunter Assocs. Lab., Inc., 5421 Brier Ridge Rd., McLean, Va., KEnmore 8-5225

Hunter Spring Co., 1 Spring Ave., Lansdale, Pa. Ulysses 5-6815

Huppert Co., K. H., 6830-40 Cottage Grove, Chicago 37, Ill. MI 3-4770

Hurst Mfg. Corp., Princeton, Ind. FUlton 5-5403

Hydel, Inc., 223 Crescent St., Waltham 54, Mass. TWinbrook 3-8200

Hydra-Power Corp., 10 Pine Court, New Rochelle, N. Y. NE-2-2200

Hydraulic Controls Co., Inc., 217 California St., Newton 58, Mass. DEcatur 2-9066

Hydromatics, Inc., 70 Okner Parkway, Livingston, N. J.

Hydroway Scales, Inc., 31302 Stephenson Hwy., Madison Heights, Mich. JOrdon 6-3965

I

IBM (International Business Machines Corp.), 590 Madison Ave., New York 22, N. Y. PLaza 3-1900

ITT Components Div., Western Operations, 815 San Antonio Road, Palo Alto, Calif. DA-6-9900

Ideal Industries, Inc., 1420 Park Ave., Sycamore, Ill. Telephone 2114

Ideal Precision Meter Co., Inc., 214-218 Franklin St., Brooklyn 22, N. Y. EV 3-6904

Ilex Optical Company, 690 Portland Ave., Rochester 21, N. Y.

Illinois Condenser Co., 1616 North Throop St., Chicago 22, Ill. EVergiade 4-1300

Illinois Testing Laboratories, Inc., 420 N. LaSalle St., Chicago 10, Ill. WHitehall 3-1331
(See advertisement on page 50)

Illumitronic Engineering Co., 680 E. Taylor Ave., Sunnyvale, Calif.
(See advertisement on page 203)

Image Instruments, Inc., 2300 Washington St., Newton Lower Falls 62, Mass. BIgelow 4-2256

Impact-O-Graph Corp., 1900 Euclid Ave., Cleveland 15, Ohio CHerry 15838

Imperial Brass Manufacturing Co., 6300 W. Howard St., Chicago 48, Ill. SPring 4-1700

Indiana Steel Products, Div. of Indiana General Corp., 405 Elm St., Valparaiso, Ind. HOward 2-3131
(See advertisement on page 196)

Induction Motors Corp., 570 Main St., Westbury, N. Y. EDgewood 4-7070

Induction Motors of Calif., Div. of Induction Motors Corp. 6058 Walker Ave., Maywood, Calif. LUdlow 3-4785

Industrial Controls Co., Central Ave. at Pinelawn, Farmingdale, L. I., N. Y. MYrtle 4-3000

Industrial Devices Inc., Edgewater, N. Y. WHitney 3-4084

Industrial Electronic Engineers, Inc., 5528 Vineland Ave., North Hollywood, Calif. TRiangle 7-1144
(See advertisement on page 92)

Industrial Engineering Corp., 525 E. Woodbine, Louisville 8, Ky. MElrose 4-3601
Representative—So. Ohio, So. Indiana
The Isaacs Co.
2708 Vine St., Cincinnati 19, Ohio PLaza 1-2414
2676 Salem Ave., Dayton 6, Ohio.
CRestview 5-6141

Industrial Instruments Inc., 89 Commerce Rd., Cedar Grove, Essex County, N. J. CEnter 9-6200
(See advertisement on pages 18, 103, 104, 110, 157)

Industrial Instruments Automation Corp., 89 Commerce Road, Cedar Grove, N. J. Center 9-6200

Industrial Instruments Engineering Corp., 89 Commerce Road, Cedar Grove, N. J. CEnter 9-6200
(See advertisement on pages 33, 157)

Industrial Measurements Corp., 445 N. Garey Ave., Pomona, Calif. NAtional 3-1588

Industrial Nucleonics Corp., 650 Ackerman Rd., Columbus 2, Ohio. AMherst 7-6351

Industrial Rectifier Devices, Inc., 324 Lafayette St., New York 12, N. Y. WOrth 4-4960

Industrial Sapphire Co., P. O. Box 422P, Quakertown, Pa. KE 6-3500
(See advertisement on page 199)

Industrial Tectonics, Inc., 3686 Jackson Road, Ann Arbor, Mich. NO-3-2451

Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y. GRamercy 3-4634
(See advertisement on page 113)

Industrial Timer Corp., 1407 McCarter Highway, Newark 4, N. J. HU 4-5600

Industrial Transformer Corp., Gouldsboro, Pa. VIctor 22111

Industro Transistor Corp., 35-10—36th Ave., Long Island City 6, N. Y. EXeter 2-8000

Inertia Switch Corp., 311 W. 43rd St., New York 36, N. Y. JUdson 6-5830

Infico, Inc., 901 S. Campbell, Tucson, Ariz. MAin 3-5401

Infrared Industries, Inc., 63—4th Ave., P. O. Box 43, Waltham 54, Mass. TWinbrook 3-5400

Ingersoll-Rand Company, 11 Broadway, New York 4, N. Y. DIgby 4-6070

Ingraham Co., North Main St., Bristol Conn. LU-2-6321

Insco Co., Div. of Barry Controls, Inc., Hollis St. Groton, Mass. GIlbert 8-6358

Instrol Inc., 125 E. De la Guerra St., Santa Barbara, Calif. WOodland 51691

Instron Engineering Corp., 2500 Washington St., Canton, Mass. CAnton 6-2500

Instrulab, Inc., 1205 Lamar St., Dayton 4, Ohio BA-3-2241

Instru-Lec Corp., 520 Homestead Ave., Mount Vernon, N. Y. MO-8-3754

Instrument Corp. of America, 1545 Kennewick Rd., Baltimore 18, Md. CHesapeake 3-8294

Instrument Corp. of Florida, P.O. Box 1226, Melbourne, Fla. PArkway 3-8112

Instrument Development Co., 1019 Emerson Ave., Salt Lake City 5, Utah. IN 6-4285

Instrument Development Laboratories, Inc., 67 Mechanic St., Attleboro, Mass. ATtleboro 1-3880

Instrument Gear Works, Inc., 4624 N. Oketo, Chicago 31, Ill. UN-7-9090

Instrument Laboratories, 315 W. Walton Place, Chicago 10, Ill. MI 2-0123

Instrument Laboratory, Inc., 934 Elliott Avenue West, Seattle 99, Wash. ATwater 3-5850

Instrument Mirror Co., Div. Houston Instr. Corp., 1514 Foley St., Houston 24, Tex. HOmestead 8-2696

Instrumentation Associates, 17 W. 60th St., New York 23, N. Y. CI-5-5590
(See advertisement on page 33)

Instruments, Inc., 3102 Sand Springs Rd., P.O. Box 556, Tulsa, Okla. LU-2-4151

Instruments for Industry, 101 New South Road, Hicksville, N. Y. OVerbrook 1-7100

Integrated Dynamics Division of Globe Industries, Inc., 711 San Mateo Blvd., SE, Albuquerque, N. M. AM-8-0224

Intelex Systems Inc., Commercial Products, 22 Thames St., New York 6, N. Y. BOwling Green 9-3800

Intercontinental Electronics Corp., 1551 Franklin Ave., Mineola, N. Y. Pioneer 6-5010

Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y. LUdlow 4-6200
(See advertisement on page 158)

International Electronic Research Corp., IERC Div., 135 W. Magnolia Blvd., Burbank Calif. VIctoria 9-2481

International Electronics Corp., 81 Spring St., New York 12, N. Y. WO-6-0790

International Instrument Co., Canyon, Calif. DRake 6-4673

International Instruments Inc., Box 2954, New Haven 15, Conn. FUlton 7-2515

International Radiant Corp., 577 East 156th Street, New York 55, N. Y. CYpress 2-6000

International Radio & Electronics Corp., Box 261—S. 17th & Mishawaka Road, Elkhart, Ind. JA-2-8583

International Rectifier Corp., 233 Kansas St., El Segundo, Calif. ORegon 8-6281
(See advertisement on page 176)

International Register Co., Instrument Div., 2630 W. Washington Blvd., Chicago 12, Ill. VAn Buren 6-4242

International Research & Development Corp., 6150 Huntley Rd., Worthington, Ohio TUxedo 5-5376

International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa. WAlnut 2-8900

International Telephone & Telegraph Corp., Industrial Products Div., 15191 Bledsoe St., San Fernando, Calif. EMpire 7-6161

Invar Electronics Corp., 323 West Washington Blvd., Pasadena, Calif. SYcamore 8-9557

Ipsen Industries, Inc., 715 So. Main St., Rockford, Ill. WOodland 5-9581

Iron Fireman Mfg. Co., Electronics Div., 2838 S.E. 9th Ave. Portland 2, Oregon BEImont 4-6551

Isotopes Specialties Co., Div. of Nuclear Corp. of America, 170 W. Providencia, Burbank, Calif. VI 9-2273

Itemco, Inc., P.O. Box 191, Port Washington, N. Y. POrt Washington 7-8330

J

Jadow, Inc., B., 860 Broadway, New York 3, N. Y.
(See advertisement on page 200)

Jamesbury Corp., 78 New St., Worcester, Massachusetts
(See advertisement on page 76)

J-B-T Instruments, Inc., New Haven 8, Conn.
(See advertisement on page 102)

JFD Electronics Corp., 6101—16th Ave., Brooklyn 2, N. Y. DEwey 1-1000

Jaegers Optical Corp., 692 Morrisk Road, Lynbrook, N. Y.
(See advertisement on page 169)

Jaidinger Mfg. Co., Inc., 1921 W. Hubbard St., Chicago 22, Ill.
(See advertisement on page 181)

James Electronics Inc., 4050 N. Rockwell St., Chicago 18, Ill. CO-7-6333
(See advertisement on page 188)

James, Pond & Clark, Inc., 2181 East Foothill Blvd., Pasadena, Calif. SYcamore 3-9195

James Vibrapowr Co. (See James Electronics)

Jan Hardware Mfg. Co., Inc., 38-01 Queens Blvd., Long Island City 1, New York EMpire 1-0800

Janco Corporation, 3111 Winona Ave., Burbank, Calif. THornwall 8-5792 and VIctoria 9-2107

Jarrell Ash Co., 26 Farwell St., Newtonville 60, Mass. DEcatur 2-2130

Jeffrey Mfg. Co., 797 No. 4th St., Columbus 16, Ohio AX-4-3331

Jeffries Transformer Co., 610 Turner Street, Los Angeles 12, Calif. MAdison 5-2185

Jelliff Mfg. Corp., C. O., Pequot Road, Southport, Conn Fairfield Exchange Clearwater 9-1615

Jennings Radio Mfg. Corp., 970 McLaughlin Ave., San Jose 8, Calif. CYpress 2-4025

Jensen Tool Co., H. C., 16 Mechanic St., Waltham 54, Mass. TW 3-7940

Jerber Engineering Co., 2334 Secane Rd., Secane, Pa.

Jerguson Gage & Valve Co., 100 Adams Street, Burlington, Mass. BRown ng 2-3600
(See advertisement on page 16)

Jo-Bell Products Inc., 5458 W. 111th St., Oak Lawn, Ill. GArden 5-0240
(See advertisement on page 36)

Johanson Mfg. Corp., P.O. Box 329, Rockaway Valley Road, Boonton, N. J. DEerfield 4-2677

Johnson Co., Inc., K. W., 1825 Webster St., Dayton 4, Ohio BA-4-1078

Johnson Corp., 805 Wood St., Three Rivers, Mich. CR-3-1715

Johnson Engrg. Co., Inc., Welton V., 95 Summit Ave., Summit, N. J. CRestview 7-4200
(See advertisement on page 193)

Johnson Mfg. Co., Inc., 148 Main St., Monroeville, Ind. Telephone 8811

Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis. BR-6-9200
(See advertisement on page 71)

Johnson-Williams, Inc., 2625 Park Blvd., Palo Alto 13, Calif. DAvenport 3-4131

Jo-Line Tools, Inc., 8442 Otis St., South Gate, Calif. LOrain 7-1489

Jones Div., Howard B., 1026 S. Homan Ave., Chicago 24, Ill. NE-2-2900

Jones & Lamson Machine Company, Comparator Division, Clinton St., Springfield, Vt. TUrner 5-2121
(See advertisement on page 39)

Jones Motrola Corp., 432 Fairfield Ave., Stamford, Conn. DAvis 4-7381

Jones Optical Works, 2400 Massachusetts Ave., Cambridge 40, Mass. TRowbridge 6-3363—3369
(See advertisement on page 169)

Jordan Controls, Inc., 3235 West Hampton Ave., Milwaukee 9, Wis. UPtown 1-9240

Joy Manufacturing Co., Oliver Building, Pittsburgh 22, Pa. GRant 1-2140

Judson Bigelow, Inc., 761 Park Ave., P.O. Box 3575, Cranston 10, R. I.
(See advertisement on page 154)

Julie Research Laboratories, Inc., 556 W. 168th St., New York 32, N. Y. LO 8-6700

K

K-F Development Co., 2606 Spring St., Redwood City, Calif. EMerson 8-5470

Kahn & Co., Inc., P. O. Box 516, Hartford 1, Conn. JAckson 9-6643

Kaiser Aircraft & Electronics, Div. of Kaiser Industries Corp., 2222 W. Peoria, Phoenix, Ariz. WIndsor 3-3431

Kanthal Corporation, Amelia Place, Stamford, Conn. DAvis 3-2206

Karn Chemical Equip. Co., 318 Dickson Ave., Pittsburgh 2, Pa. WEllington 1-2943

Karnish Instrument Sales & Service, Inc., 3rd Ave. & Maple, Lock Haven, Pa. LOck Haven 7711.

Karr Co., R. J., 1605—16th St., Wyandotte, Mich. AV 4-4100

Kates Co., W. A., 430 Waukegan Road, Deerfield, Ill. WIndsor 5-0050

Kato Engineering Co., Mankato, Minn. Telephone 8-2941
(See advertisement on page 103)

Kavamil Co., Inc., 1501 W. El Segundo Blvd., Compton, Calif. NEvada 6-9400

Kay Electric Co., Maple Ave., Pine Brook, N. J. CApital 6-4000

Kearfott Div., General Precision Inc., Little Falls, N. J. CLifford 6-4000

Kearney Industries, Delanium Graphite Div., P.O. Box 501, So. Plainfield, N. J. LIberty 9-3800

Keckley Co., O.C., 3400 Cleveland St., Skokie, Ill. ORchard 4-8422

Keim Precision Mirrors Corp., 1346 E. Colorado St., Glendale 5, Calif. CH 5-2725

Keinath Instrument Co., 1223 Grandview Ave., Columbus 12, Ohio HUdson 6-0311

Keller, Hugo P., 58 E. 42nd St., New York 17, N. Y. MUrray Hill 2-8150
(See advertisement on page 184)

Kellogg Switchboard & Supply Co., 6650 South Cicero Ave., Chicago 38, Ill.

Kelvin Electric Co., 5907 Noble Ave., Van Nuys, Calif. STate 2-6602

Kemlite Laboratories, Inc., 1810 W. Grand St., Chicago 22, Ill. TA 9-6050

Kemp Mfg. Co., C. M., 405 E. Oliver St., Baltimore 2, Md. VErnon 7-1190

Kemtron Electron Prod. Inc., 14 Prince Pl., Newburyport, Mass. HO-2-4464

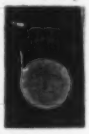
Kendrick & Davis Co., 11 Water St., Lebanon 2, New Hamp. LKb. 13

Kennedy & Co., D. S., 432 S. Main St., Cohasset, Mass.

Kepco, Inc., 131-38 Sanford Ave., Flushing 55, N. Y.

Kennico Tube Co. Div., Robinson Technical Products, Inc. Mount Kisco, N. Y. Mount Kisco 6-3046
(See advertisement on back cover)

Model HT-12 Four-Range Tachometer
Centrifugal tachometer that measures revolutions per minute and surface speeds.



TOTAL RANGE: 90-12,000 RPM
1st — 90-360 RPM
2nd — 300-1200 RPM
3rd — 900-3600 RPM
4th — 3000-12000 RPM
Feet per minute—one half the dial reading with use of 6" disc wheel.

Advantages: **Accuracy—±0.5% • Stop button feature • Instantaneous readings • 3" easy to read dial • Light—approx. 14 oz.**

Kernco Instruments Co., Inc.
Box 1284, Church St. Station
New York 8, N. Y.

CIRCLE 395 ON READER-SERVICE CARD

Kernco Instruments Co., Inc., P.O. Box 1284, Church Street Station, New York 8, N. Y. TErrace 9-0685
(See advertisement on page 223)

Kerotest Manufacturing Co., 2525 Liberty Ave., Pittsburgh 22, Pa. GRant 1-2584

Kessler Co., Inc., Frank, 41-45 47th St., Long Island City 4, N. Y. STillwell 4-0283
(See advertisement on page 188)

Keuffel & Esser Co., 300 Adams St., Hoboken, N. J. OLfield 9-1100

Keystone Manufacturing Co., 23328 Sherwood, Warren, Mich. SL-7-4400

Kidde & Company, Walter, Inc., 177 Main St., Belleville 9, N. J. PLymouth 9-5000

Kieley & Mueller, Inc., 64 Genung St., Middletown, N. Y. DI 2-2526

Kilovolt Corporation, 2 Manor House Square, Yonkers, N. Y.
(See advertisement on page 114)

Kimball Co., A., 8 Rowe St., Brooklyn 11, N. Y. STagg 2-2700

Kinematics Corp., 1353 New York Ave., Huntington Station, N. Y. MYrtle 2-6162

Kinetic Instrument Corp., 1070 Linwood Street, Brooklyn 8, N. Y. NIghtingale 9-8500

King Engineering Corp., P. O. Box 620, Ann Arbor Mich. NO. 2-5451
(See advertisement on page 39)

King Tester Corp., 444 N. 13th St., Philadelphia 23, Pa.

Kings Electronics Co., Inc., 40 Marbledale Rd., Tuckahoe, N. Y. SWiftwater 3-5000

Kingston Industries, Inc., 35 North St., Medfield, Mass. FLeetwood 9-4347

Kinney Vacuum Div., The New York Air Brake Co., 3529 Washington St., Boston 30, Mass. JA-3-7100

Kintronic Div., Chicago Aerial Industries, 10134 Pacific Ave. Franklin Park, Ill. GLadstone 1-1830

Kirkland Co., H. B., 10 King St., Morristown, N. J. JEfferson 8-2777

Kistler Instrument Corp., 15 Webster St., N. Tonawanda, N. Y. Jackson 2099

Klinger Scientific Apparatus, J., 82-87 160th Street, Jamaica 32, N. Y. OL-7-0325

Klipfel Valves, Inc., 1075 Lincoln Ave., Hamilton, Ohio TWinbrook 5-5661

Knonn Inc., 1307—66th St., Oakland 8, Calif. OLympic 3-1661

Kocour Company, 4800 S. St. Louis Ave., Chicago 32, Ill. VIrginia 7-1111

Koehler Instrument Co., Inc., 168-56 Douglas Ave., Jamaica 33, N. Y. JAmaica 3-7189

Kollmorgen Corp., 347 King St., Northampton, Mass. JUstice 4-0280

Kollsman Instrument Corp., 80-08 45th Ave., Elmhurst 73, N. Y. TWining 9-5800

Koontz-Wagner Electric Co., Inc., 516 N. Michigan St., South Bend 1, Ind. CEntral 3-8251

Korfund Co., Inc., 48-15 22nd Place, Long Island City 1, N. Y. RA-9-7580

Kruger Instruments, Harold, 313 W. Valley Blvd., San Gabriel, Calif. AT 4-3941

Kulka Electric Corp., 633 So. Fulton Ave., Mt. Vernon, N. Y. MO 4-4024

Kunkle Valve Co., 121 So. Clinton St. Ft. Wayne, Ind. A-7289
(See advertisement on page 42)

Kurman Electric Co., A Subsidiary of Crossent Petroleum Corp, 191 Newel St., Brooklyn 22, N. Y. EVergreen 3-5000
(See advertisement on page 178)

Kurz-Kasch, Inc., 1421 S. Broadway, Dayton 1, Ohio. BAldwin 3-8181

Kwikheat Mfg. Co., 3732 San Fernando Rd., Glendale 4, Calif. CHapman 5-2376

L

L.A.B. Corporation, 985 E. Onondaga, Skaneateles, N. Y. OVerbrook 5-5781

L & L Mfg. Co., 176—8th St., Upland, Pa. TRemont 2-5164

L & R Mfg. Co., 527 Elm St., Kearny (Arlington), N. J. WYman 1-5330

Labelass Inc., N. W. Boulevard, Vineland, N. J. OX-1-3200

Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill. SAcramento 2-5151

Laboratory Construction Co., 8815 Prospect., Kansas City, Mo. EM-3-1355

Laboratory Equipment Corp., P.O. Box 151, St. Joseph, Mich. YUkon 3-5533

Laboratory for Electronics, Inc., Computer Products Division, 1079 Commonwealth Ave., Boston 15, Mass. ALgonquin 4-4235

Laboratory Furniture Co., Inc., Old Country Road, Mineola, N. Y. PIoneer 2-3600

Lafayette Instrument Co., 52 By Pass and North 26 St., Lafayette, Ind. SH-2-7937

Lake Erie Electric Mfg., Inc., 2952 W. 22nd St., Erie, Pa.
Pittsburgh and Buffalo Representative
M R Isaacs & Associates, Inc.
818 Noblestown Rd., Pittsburgh 5, Pa. WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3229

La Marche Mfg. Co., 3955 25th Ave., Schiller Park, Ill. TUxedo 9-5830

Lamb Electric Co., Div. of Am. Machine & Metals, Inc. Lake St., Kent, Ohio. ORchard 3-3451

Lambda Electronics Corp., 11-11 131st St., College Point 56, N. Y. INdependence 1-8500

LaMotte Chemical Products Company, Chestertown, Maryland Chestertown 1060

Lampkin Laboratories, Inc., IAC Div., Bradenton, Florida Telephone 6-4178

Lancaster Glass Corp., 220 West Main St., Lancaster, Ohio OLive 3-0311

Land-Air, Inc., Subsidiary of California Eastern Aviation, Inc., 7444 W. Wilson Ave., Chicago 31, Ill. Underhill 7-7550

Landis & Gyr, Inc., 45 W. 45th St., New York 36, N. Y. JU-6-4414
(See advertisement on page 88)

Landwerk Electrometer Co., 841 Sonora Ave., Glendale 1, Calif. CHapman 56787
(See advertisement on page 130)

Langmar Corp., 4875 W. Armitage Ave., Chicago 39, Ill. BE-7-2375

Lansdale Div. of Philco Corp., Church Road, Lansdale, Pa. ULysses 5-4681

LaPine and Company, Arthur R., 6001 South Knox Ave., Chicago 29, Ill. REliance 5-4700

Larp Insulator Co., Inc., Process Equip. Div., 36 Cane St., Leroy 2, N. Y. Leroy 385

Largent Co., P.O. Box 9845, Houston 15, Texas

Larson Instrument Co., 24 Orchard St., Tarrytown, N. Y. MEdford 1-3419

Lavallee & Ide, Inc., Grape St., Chicopee, Mass. LYceum 4-6601

LaVezzi Machine Works, 4833 W. Lake St., Chicago 44, Ill. EStorbrook 8-1636
(See advertisement on page 90)

Lavoie Laboratories, Inc., Matawan-Freehold Road, Rte. 79, Morganville, N. J. LOwell 8-2600

Leach Corp., 18435 Susana Road, Compton, Calif. NEvada 6-1061
(See advertisement on page 178)

Leach Relay Div., Leach Corp., 5915 Avalon Blvd., Los Angeles 3, Calif.

Ladeen Inc., 2250 No. Gilman Rd., El Monte, Calif. CUmberland 3-8163

Lee Spring Co., Div. of Leetronics Inc., 30 Main St. Brooklyn 1, N. Y. ULster 5-7163

Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa. DAvenport 9-4000

Leemath Incorporated, Oak Drive, Syosset, N. Y. WAlnut 1-3080

Leetronics, Inc., 30 Main St., Brooklyn 1, N. Y. ULster 5-7163

Leiman Bros., Inc., P.O. Box 1339, 146-181 Christie St., Newark 5, N. J. MA-3-7520

Lel, Inc., 380 Oak St., Copiague, N. Y. AMityville 4-2200

Leland Inc., G. H., 123 Webster St., Dayton 2, Ohio BAldwin 4-9891

Lenox Instrument Co., 2910 Chancellor St., Philadelphia 3, Pa. LOcust 8-6611

Lenz Electric Manufacturing Co., 1751 N. Western Ave., Chicago 47, Ill.

Leonard, Inc., Wallace O., 373 So. Fair Oaks Ave., Pasadena, Calif. SYCamore 2-7131 or RYan 1-4446

Lepel High Frequency Laboratories, Inc., 54-18 37th Ave., Woodside 77, N. Y. HAvemeyer 6-4580

Leren Electronics, Inc., 501 So. Varney St., Burbank, Calif. Victoria 9-5556

Lerma Engineering Corporation, 53 Clark Ave., Northampton, Mass. JUstice 4-9356

Leroy M. E. Clausing Co., 8038 Monticello Ave., Skokie, Ill. Chicago Tel. COrnelia 7-3399

Leslie Co., 122 Delafield Ave., Lyndhurst, N. J. GEneva 8-8000
(See advertisement on page 80)

Levy & Co., Inc., Max, Wayne Ave. & Berkley St., Philadelphia 44, Pa. DA-9-7875
(See advertisement on page 183)

Lewis Engineering Co., 339 Church St., Naugatuck, Conn. PArk 9-5253
(See advertisement on page 31)

Lewis and Kaufman, Ltd., 17320 El Rancho Ave., Los Gatos, California. ELgato 4-3540

Lexington Controls Inc., P.O. Box 122, Burlington, Mass. BR-2-2100, MI-3-9000

Librascope Division-General Precision, Inc., 808 Western Ave., Glendale 1, Calif. CItrus 4-6541
Northeast Rep—Burbank Div. Davidson and Hammendinger
2857 Nazareth Rd., Easton, Pa.
BLackburn 8-2345, or 8-2348

Lignum-Vitae Products Corp., 96-1P Boyd Ave., Jersey City 4, N. J. HE-3-3827-8
(See advertisement on page 133)

Lind Instruments, Inc., 257 Nassau Princeton, N. J. WAlnut 1-3844

Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.

Linear Controls Co., 3400 Main, Skokie, Ill. ORchard 6-1667

Ling Electronics Div. of Ling-Altec Electronics, 1515 South Manchester, Anaheim, Calif. PRospect 4-2700

Link Div.—General Precision, Inc., Binghamton, N. Y. RA 3-9311

Liquidometer Corp., Industrial Div., 41-03 36th St., Long Island City 1, N. Y. STillwell 4-1440
(See advertisement on page 35)

Littelfuse, Inc., 1865 Miner St., Des Plaines, Ill. VA 4-1188

Los Engineering Co., 2092 North Lincoln, Pasadena, Calif. SY-6-6594 and MU-1-0538
See advertisement on page 127)

Loran Engineering Co., 4901 W. Lawrence Ave., Chicago 30, Ill. PE-6-7500

Lord Manufacturing Co., 1635 W. 12th St., Erie, Pa. GLendale 6-8511

Los Angeles Scientific Instrument Co., 2451 Riverside Dr., Los Angeles 39, Calif. NO-2-2128

Lovejoy Flexible Coupling Co., 4343 W. Lake St., Chicago 44, Ill. ES-9-3010

Lucifer Furnaces, Inc., 374 Easton Road, Neshaminy, Pa. DIamond 3-0411

Ludlow Papers, Needham Heights 94, Mass. HIllcrest 4-4000

Lufkin Rule Company, 1730 Hess Street, Saginaw, Mich. PLeasant 2-2141

Luma Electric Equipment Co., 1807 Coining Dr., Toledo 12, Ohio GReenwood 5-4163

Lumatown Electronics, Inc., 116 County Courthouse New Hyde Park L. I., N. Y. Pioneer 7-3200

Lumen, Inc., Box 905, Joliet, Ill. SAratoga 3-9324

Lundell & Co., 7356 S. Woodlawn St., Chicago 19, Ill. HY-3-3700

Lundy Manufacturing Corp., Robert Lane, Glen Head, N. Y. ORiole 6-1440

Luxo Lamp Corp., Dock St., Port Chester, N. Y. WEstmore 7-4433
(See advertisement on page 189)

Lynch Communication Systems Inc., 695 Bryant St., San Francisco 7, Calif. EXbrook 7-1471

Lynn, Robert M., 319 N. Rolyn Place, Arcadia, Calif. Hillcrest 7-3200
(See advertisement on page 224)

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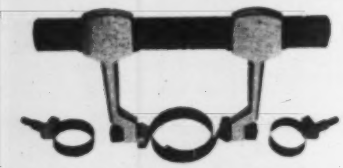

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MB Electronics, P.O. Box 1825, 781 Whalley Ave., New Haven 10, Conn. FUlton 9-1511

M-H (see Minneapolis-Honeywell)

M M Enclosures, Inc., 111 Bloomingdale Road, Hicksville, L. I., N. Y. WElls 1-1770
(See advertisement on page 154)

M & Q Plastic Products, 12 Bannard St., Freehold, N. J. HOpkins 2-6663

MSA Research Corp., Callery, Pa. Evans City 3510

Macbeth Corporation, P.O. Box 950, Newburg, N. Y. JO-1-7300
(See advertisement on page 129)

Machinery Electrification, Inc., 56 Hudson St., Northboro, Mass. EXeter 3-2461

Machlett Laboratories, Inc., 1063 Hope Street, Springdale, Conn. Fireside 8-7511

Mack Electric Devices, Inc., 38 Glenside Ave., Wyncote, Pa. TUrner 4-8123
(See advertisement on page 178)

MacLaren & Co., F. B., 6 West 18th St., Huntington Station, New York. HA 3-4433

Madden Corporation, 1345 Jarvis Avenue, Chicago, Ill. BR-4-3800

Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill. UNderhill 7-8000

Magnasyne Corp., 5546 Satsuma Ave., No. Hollywood, Calif. TR-7-5493

Magnavox Co., Research Labs., 2255 S. Carmelina Ave., Los Angeles 64, Calif. BR 2-0347

Magnecraft Electric Co., 3352 W. Grand Ave., Chicago 51, Ill. EVergiade 4-6868

Magnetic Controls Company, 6405 Cambridge Street, Minneapolis 26, Minn. WEst 9-4691

Magnetic Devices, Inc., 712 East, Frederick, Md. MO 2-2144

Magnetic Instruments Co., Inc., 637 Commerce St., Thornwood, N. Y. RO 9-5312

Magnetic Research Corp., 3160 W. El Segundo Blvd., Hawthorne, Calif. OSborne 5-1171

Magnetic Shield Div., Perfection Mica Co., 1322 N. Elston Ave., Chicago 22, Ill. EVergiade 4-2122
(See advertisement on page 165)

Magnetico, Inc. TA Div., 6 Richter Court, E. Northport, N. Y. ANdrew 1-4502

Magnetrol, Inc., 2110 So. Marshall Blvd., Chicago 23, Ill. Bishop 7-4000
(See advertisement on page 34)

Main & Sons Inc., Robt. A., 461 W. Main St., Wyckoff, N. J.

Malco Manufacturing Co., 4025 West Lake St., Chicago 24, Ill. VAn Buren 6-9300

Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind. MElrose 6-5353

Mandex Mfg. Co. Inc., 2614 W. 48th St., Chicago 32, Ill. CLiffside 4-4200

Mann Company, David W., Div. of Geophysics Corp. of America, Box P, Lincoln, Mass. CLearwater 9-9015

Manning, Maxwell & Moore, Inc., 250 E. Main St., Stratford, Conn. DRexel 8-8281

Manostat Corp., 26 N. Moore St., New York 13, N. Y.

Mansfield & Green, Inc., 1051 Powr Ave., Cleveland 14, O. MAin 1-7565
(See advertisement on page 46)

Manson Laboratories, Inc., 375 Fairfield Ave., Stamford, Conn. DAvis 5-1391

Marathon Battery Co., 840 Henrietta St., P.O. Box 208, Wausau, Wis. VI-2-2025

Marathon Electric Mfg. Corp., Wausau, Wis. Telephone 2-2011

Marathon Special Products Corp., 1201 West 12th St., Erie, Pa. GL-22004

Marco Industries Company, 207 So. Helena St., Anaheim, Calif. KEystone 5-6037

Marconi Instruments, 111 Cedar Lane, Englewood, N. J. LO-7-0007-8-9

Mark-Tex Corp., 453 W. 17th St., New York 33, N. Y. WAtkins 9-1811

Marlin-Rockwell Corporation, 402 Chandler St., Jamestown, N. Y. Telephone 61-541

Marotta Valve Corp., 1500 Boonton Ave., Boonton, N. J. DEerfield 4-7800

Marquardt Corp., Pomona Div., 2709 N. Garey Ave., Pomona, Calif. LYcoming 3-1311

Marsco Mfg. Co., 2901 South Halsted Street, Chicago 8, Ill. DAnube 6-4710

Marsh Instrument Co., 3501 Howard St., Skokie, Ill. ORchard 3-4300
(See advertisement on page 42)

Marshall Co., L. H., Station B, Columbus 2, Ohio AX 9-4159

Marshall Instruments Inc., 14203 Bessemer St., Van Nuys, Calif. STate 2-4014

Marshalltown Mfg. Co., 800 E. Nevada St., Marshalltown 3, Iowa Telephone 44.1
(See advertisement on page 41)

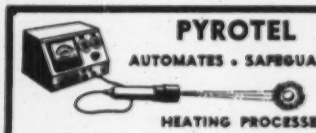
Martin & Co., H. S., 1916 Greenleaf St., Evanston, Ill. GR 5-0707

Martin-Decker Corporation, 3431 Cherry Avenue, Long Beach 7, Calif. GArfield 4-1696

Martindale Electric Co., 1360 Hird Ave., Cleveland 7, Ohio LAkewood 1-8567

Marx Co., Clarence J., 164 East 199th St., Cleveland 19, O. KEnmore 1-8952
(See advertisement on page 58)

Mason Instrument Company, P.O. Box 1681, GPO, New York City 1, N. Y. MOunt Vernon 4-3069
(see advertisement on page 224)



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Mason-Neilan Div., Worthington Corp., 55 Nahatan St., Norwood, Mass. NOrwood 7-4600
(See advertisement on page 77)

Massa Div. of Cohu Electronics, Inc., 5 Fottler Rd., Hingham, Mass. HIverview 9-4800

Mast Development Co., Inc., 2212 E. 12th St., Davenport 30, Iowa. Telephone 3-9729

Master Specialties Co., 956 East 108th St., Los Angeles 59, Calif. LOrain 4-4481

Mastercraft Instrument Company, 1508 McPoland Ave., Dubuque, Iowa

Materials Electronic Products Corp., 996 Spruce St., Trenton 8, N. J. EXport 4-9600

Maurer, Inc., J.A., 37-01 31 Street, Long Island City 1, N. Y. STillwell 4-4600

Maxson Corp., W. L., 475 Tenth Ave., New York 18, N. Y. LOngacre 5-1900

Mayer Co., Inc., Geo. J., 546 E. Market St., Indianapolis 9, Ind. MElrose 6-6422
(See advertisement on page 186)

McAlear Mfg. Co., 1901 S. Western Ave, Chicago, Ill.
Pittsburgh and Buffalo Representative
M. S. Jacobs & Associates, Inc.
816 Noblestown Rd., Pittsburgh 5, Pa. WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3222

McCoy Electronics Co., Chestnut and Walts St., Mount Holly Springs, Penna. HUnter 6-3411

McDaniel Refractory Porcelain Co., 510 9th Ave., Beaver Falls, Pa. TIlden 3-8300

McDonnell & Miller, Inc., 2500 N. Spaulding Ave., Chicago 18, Ill. COrnelia 7-1600

McHugh & Son, Raymond F., Box 6023, Philadelphia 14, Pa. MA 4-8069

McIlvaine, O. T., 15 So. First St., Geneva, Ill. GEneva 7150

McIntosh Equipment Corp., Walker Crosweller Div. 21 Park Row, New York 38, N. Y. DIgby 9-3288

McKenna Laboratories, 2503 Main St., Santa Monica, Calif. EXbrook 9-8846

McLean Engineering Laboratories, 70 Washington Road, P.O. Box 228, Princeton, N. J. WAlnut 4-4440

Measurements Div., Mc-Graw-Edison Co., Box 180, Boonton, N. J.

Measurements Research Co., 3801 Castor Ave., Philadelphia 24, Pa. JEfferson 5-0911

Mechanical Products Corporation, 1716 W. Hubbard St., Chicago 22, Ill. CAnal 6-7750

Mechanical Products, Inc., 1824 River St., Jackson, Mich. STate 2-9391

Med-Tronics Mfg. Co. Inc., 1845 Westchester Avenue, Bronx 72, N. Y. City TA 4-2190

Mefco Sales & Service, Inc., 131 North Fifth Ave., Arcadia, Calif. ELliott 9-6136

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Megadyne Electronics, Inc., 189 No. Main St., Port Chester, N. Y. WEstmore 9-3060

Meikle Manufacturing Co., 1335 So. MacArthur Blvd., Springfield, Ill. Telephone 2-1600
(See advertisement on page 223)

Meletron Corporation, 950 North Highland Avenue, Los Angeles 38, Calif. HOllywood 3-4841

Melpar, Inc., Special Prods. Dept., 3000 Arlington Blvd., Falls Church, Va. JEfferson 4-600

Mepco, Inc., 35-37 Abbett Avenue, Morristown, N. J. JEfferson 9-2000
Merveid Corp., 4201 Belmont, Chicago 41, Ill. PEnsacola 6-2100
(See advertisement on page 183)

Mercury Contacts, Inc., 1950 Neva Drive, Dayton 14, Ohio CHestview 8-4719

Mercury Transformer Corp., 12950 Panama Street, Los Angeles 66, Calif. UPton 0-8380

Meriam Instrument Co., 10920 Madison Ave., Cleveland 2, O. ATlantic 1-1100
(See advertisement on pages 27, 38)

Merit Coil & Transformer Corp., 2027 Sherman Street, Hollywood, Fla. WAbash 3-1536

REPRESENTATIVES

Okla., Kan., Nebr., Colo.

G. T. Cook Co., Midland Bldg. Kansas City 5, Mo., VI. 2-9678

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Mr. Bruce Irwin, 3033 N. Central Ave., Phoenix, Ariz.

Miss., Ala., La., Ark., Tenn.

L. E. Offutt Co., 1492 S. Roselle St. Memphis, Tenn., BR 4-0235

Texas

Mr. John A. West, 1230 S. Montreal Dallas 8, Tex. FE. 1-6970

Indiana

Hayden, Quinn & Pollard, 618 Wysor Bldg., Muncie, Ind., AT. 4-1691

Merit Specialties Co., Inc., 205 E. Davis St., St. Louis 11, Mo. VErnon 2-1706

Merkle-Korff Gear Co., 213 North Morgan Street, Chicago 7, Ill. MOnroe 6-1900

Merz Engineering, Inc., 200 So. Harding St., Indianapolis 7, Ind. MElrose 2-7431

Metalab Equipment Co., Duffy Ave., Hicksville, L. I., N. Y.

Metalphoto Corp., 6811 Superior Ave., Cleveland 3, Ohio UTah 1-7575

Metals & Controls Div., Texas Instruments Inc., 34 Forest St., Attleboro, Mass. Telephone 1-2800

Metalsalts Corp., 200 Wagaraw Road, Hawthorne, N. J. PR 6-2626

Metavac, Inc., 45-68 162nd St., Flushing 58, N. Y. Hickory 5-0400

Meters Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind. CLifford 5-3570

Methods Research Corp., 105 Willow Avenue, Statten Island 5, N. Y.

Metrol, Inc., 17 E. Holly St., Pasadena, Calif. SYcamore 3-3085

Metrolog Corporation, 169 N. Halstead, Pasadena, Calif. MU-1-5194

Metron Instrument Co., 432 Lincoln St., Denver 8, Colo. PEarl 3-3764

Metronix, Inc., 75 Wilson Mills Road, Chesterland, Ohio HAmilton 3-4440

Mettler Instrument Corp., Highstown, New Jersey
(See advertisement on page 85)

Metzger Company, Claude, 635 Madison Avenue, New York 22, New York PLaza 5-0285

Metzger & Son, F. F., 2600 N. 6th St., Philadelphia 33, Pa. BA 9-3161

Mica Insulator Division of Minnesota Mining & Mfg. Co., 797 Broadway, Schenectady 1, N. Y. FRanklin 4-4191

Michigan Precision Swiss Parts Co., 2312-C Grayson Avenue, Ferndale 20, Mich. LIncoln 3-4971

Mico Instrument Co., 80 Trowbridge St., Cambridge 38, Mass. KI 7-8660

Micro Balancing, Inc., 191 Herricks Road, Garden City Park, L. I., N. Y. PI 6-0851

Micro Gee Products, Inc., 6319 W. Blauson Ave., P.O. Box 1005, Culver City, Calif. EXmont 1-6719

Microchemical Specialties Co., 1826 Eastshore Highway, Berkeley 10, Calif. Thornwall 3-1282

Micro-Circuits Co., New Buffalo, Mich. Telephone 1163

Microdot, Inc., 220 Pasadena Ave., So. Pasadena, Calif. RYan 1-3551

Micro-Lectric Division, Micro Machine Works, Inc., 19 Debevoise Avenue, Roosevelt, L. I., N. Y. FIeeport 8-3222

Microloc Corp., 5743 Marilyn Ave., Culver City, Calif. TExas 05535

Micromat Co., 548 Piermont Ave., Hillsdale, N. J.

Micrometrical Manufacturing Co., 345 So. Main St., Ann Arbor, Mich. NOrmandy 2-5626

Micronics Div., Elgin National Watch Co., 366 Bluff City Blvd., Elgin, Ill. SHerwood 2-5700

Microsonics Inc., Hingham Industrial Ctr., Hingham, Mass. RI 9-3100

Microtech Division, Federal-Mogul-Bower Bearings, Inc., 1201 N. Arden Drive, El Monte, Calif. Gilbert 3-3081

Microtech Services Co., 775 Sunshine Drive, Los Altos, Calif. YOrkshire 8-4708

Micro-Test, Inc., 1718 21st Street, Santa Monica, Calif.

Microtran Co., Inc., 145 E. Mineola Ave., Valley Stream, N. Y. LO-1-6050

Microwave Associates, Inc., South Ave., Burlington, Mass. BRowning 2-3000

Microwave Development Laboratories, Inc., 92 Broad St., Babson Park 57, Wellesley, Mass. CEdar 5-0252

Midwest Automatic, Inc., 510 3rd Street, Des Moines 9, Iowa CH-4-3163

Mid-West Instrument Division, Astra Associates, Inc., 1021 E. State Fair Ave., Detroit 3, Mich. TWinbrook 3-8250
(See advertisement on page 44)

Midwestern Instruments, P.O. Box 7186, Tulsa 18, Okla. RIverside 7-1331

Milgo Electronic Corp., 7601 NW 36th Ave., Miami 47, Fla. OX 1-1220

Millen Mfg. Co., James, Inc., 150 Exhange St., Malden 48, Mass. DAvenport 4-4108

Miller & Associates, David, Box 572 Beverly Hills, Calif. OL 57861

Miller Company, L. C., 717 Monterey Pass Road, Monterey Park, Calif. ANgelus 8-3611

Miller-Harris Instrument Co., 1134 So. First Street, Milwaukee 4, Wisc. EVergreen 3-7256

Millers Falls Co., 57 Wells St., Greenfield, Mass. PR 3-5426

Millitest Corporation, 88 Madison Avenue, Hempstead, Long Island, N. Y. IVanhoe 9-9672

Millivac Instruments Div., Cohu Electronics, Inc., 2315 Second Ave., Carmen, Schenectady, N. Y. ELgin 5-6550

Milman Engineering Co. Inc., 11162 Santa Monica Blvd., Los Angeles 25, Calif. GRanite 3-0616

Milro Controls Co. Inc., 280 Midland Ave., Saddle Brook, N. J. SWarthmore 1-1850

Milton Ross Metals Co., 239 Jacksonville Rd., Hatboro, Pa. OSbourne 2-0550

Milton Roy Company, 1300 Mermaid Lane, Philadelphia 18, Pa. CHestnut Hill 7-8000

Minarik Electric Co., 224 E. Third St., Los Angeles 13, Calif. MAdison 4-3161

Minco Products, Inc., 740 Washington Ave., N., Minneapolis 1, Minn. FEderal 8-6753

Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa. CH 1-5900
(See advertisement on page 33)

Miniature Electronic Components Corporation, 21 Plymouth Street, Holbrook, Mass. WOodlawn 3-7717

Miniature Precision Bearings, Inc., Precision Park, Keene, N. H. EL-2-1888

Minneapolis Electric & Construction Co., 80 S. 12th St., Minneapolis 3, Minn. FE 2-0946

Minneapolis-Honeywell Regulator Co., Aeronautical Div., 2600 Ridgeway Road, Minneapolis 13, Minn. ST-1-3011

Minneapolis-Honeywell Regulator Co., Boston Div., 40 Life St., Boston 35, Mass. AL-4-5200

Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Wayne & Windrim Aves., Philadelphia 44, Pa. DAvenport 9-8300

Minneapolis-Honeywell Regulator Co., Heiland Div., 5200 E. Evans Ave., Denver 22, Colo. SKyline 6-3481

Minneapolis-Honeywell Regulator Co., Industrial Controls Div., 2753 Fourth Ave., S., Minneapolis 8, Minn. FEderal 2-5225

Minneapolis-Honeywell Regulator Co., Industrial Systems Div., 10721 Hanna St., Beltsville, Md. GRanite 4-6700

Minneapolis-Honeywell Regulator Co., Marion Instrument Div., Grenier Field, Manchester, N. H. NAtional 5-6971

Minneapolis-Honeywell Regulator Co., Micro Switch Div., 11 W. Spring St., Freeport, Ill. ADams 2-1122

Minneapolis-Honeywell Regulator Co., Missile Equipment Div., Queen & So. Bailey, Pottstown, Pa. FA-3-4000

Minneapolis-Honeywell Regulator Co., Rubicon Instruments Div., Ridge Ave. at 35th St., Philadelphia 32, Pa. BAldwin 5-3737

Minneapolis-Honeywell Regulator Co., Semiconductor Products Div., 1015 South 6th St., Minneapolis 4, Minn. FEderal 2-5225

Minneapolis-Honeywell Regulator Co., Valve Div., 200 Commerce Dr., Fort Washington, Pa. MItchell 6-1780

Minnesota Mining & Mfg. Co., Magnetic Products Div., 900 Bush Ave., St. Paul 6, Minn. PArkpect 6-8511

Missimers Incorporated, 3737 San Fernando Road, Glendale 4, Calif. CHapman 5-8471

Missouri Research Labs., Inc., 2109 Locust St., St. Louis 3, Mo. CHestnut 1-7875

Mitchell Camera Corp., 666 West Harvard St., Glendale 4, Calif. CHapman 5-1085

Mitchell Radiation Products Corp., East Washington St., P.O. Box 857, Norristown, Pa. BRoadway 9-4847

Mixing Equipment Co., Inc., 135 Mt. Read Blvd., P.O. Box 1370, Rochester 11, N. Y. ID 6-5550

Model Engrg. & Mfg., Inc., 50 Frederick St., Huntington, Ind. Telephone 104

Model Rectifier Corp., 1675 Utica Ave., Brooklyn 34, N. Y. CLoverdale 8-6800

Modern Industries, Inc., 5755 Camille Ave., Culver City, Calif. TExas 02020

Modern Laboratory Equipment Co., Inc., 1809-11 First Ave., New York 28, N. Y. TR 6-4700

Modernair Corporation, 400 Preda Street, San Leandro, Calif. LO-2-6485

Moeller Instrument Co., 132-02 St. & 89th Ave., Richmond Hill 18, N. Y. Virginia 9-2100
(See advertisement on page 68)

Moisture Register Company, 1510 West Chestnut Street, Alhambra, California CUmberland 3-3143

Molex Products Co., 9515 Southview Ave., Brookfield, Ill. HUnter 5-5881

Monitor Systems Inc., Fort Washington Industrial Park, Fort Washington, Pa. MI-68100

Monitron Company, 1815 Wilaray Terrace, Cincinnati 30, Ohio BEechmont 1-3051

Monroe Calculating Machine Co., Components Div., 60 Main St., San Francisco 5, Calif. DO 2-7328

Monroe Calculating Machine Co., Div. of Litton Industries, 555 Mitchell St., Orange, N. J. OR 3-6600

Montgomery Mfg. Co., 204 S. Main, Owensville, Ind. SAratoga 4-2505

Moog Servocontrols, Inc., Proner Airport, E. Aurora, N. Y. CYpress 2000

Moore Associates, Inc., 2600 Spring St., Redwood City, Calif. EMerson 9-6784
Rep—E. Pa., So. N. J., Dela., Md., D. C., Va.
L. C. Fuller & Co.
32 Rittenhouse Place, Ardmore, Pa.
MIdway 2-2468

Moore & Co., Samuel, Dekoron Products Div., Main & Orchard St., Mantua, Ohio CRestwood 4-2276
(See advertisement on page 202, 203)

Moore Products Co., H & Lycoming Sts., Philadelphia 24, Pa. JE 3-3500

Morehouse Machine Co., 1742 Sixth Ave., York, Penna. Telephone 81332

Morris Co., J. I., 394 Elm St., Southbridge, Mass. POrter 4-4394

Moseley Co., F. L., 409 N. Fair Oaks Ave., Pasadena, Calif. SYcamore 2-1176

Moser Jewel Co., 544 Fayette St., Perth Amboy, N. J. HIllcrest 2-2454
(See advertisement on page 164)

Motech Co., P.O. Box 6009, Kansas City 10, Mo. LOgan 1-0202
(See advertisement on page 64)

Motorola Communications & Electronics, Inc., 4501 W. Augusta, Chicago 51, Ill. SP 2-6500

Motorola Inc., Military Electronics Division, 8201 E. McDowell Road, Scottsdale, Arizona WHitney 5-4311

Motorola Semiconductor Products Inc., 5005 E. McDowell Rd., Phoenix, Arizona BRidge 5-4411

Motson Co., J. Frank, 1717 Bethlehem Pike, Flourtown, Pa. CHestnut Hill 7-1900

Mucon Corp., 9 St. Francis St., Newark 5, N. J. MI-2-1476

Mueller Co., 512 W. Cerro Gordo St., Decatur, Ill. Telephone 3-4471

Mueller Electric Co., 1583 E. 31st St., Cleveland 14, Ohio PRospect 1-5225

Muirhead Instruments, Inc., 441 Lexington Ave., New York 17, N. Y. MUrray Hill 2-8131

Mullins Mfg. Co., 3311 W. Davis, Dallas 11, Texas
(See advertisement on page 156)

Multi-Amp Corp., 407-C Lehigh Ave., Union, N. J. MUrdock 8-7112

Murphy Mfg. Inc., Frank W., 3137 S. Sheridan, Tulsa 24, Okla. TE 8-3387

Murphy & Miller, Inc., 620 W. Taylor St., Chicago 7, Ill. HArrison 7-8900

Mycalex Corporation of America, 125 Clifton Blvd., Clifton, N. J. PR-9-8866

N

NJE Corporation, 20 Boright Ave., Kenilworth, N. J. BRidge 2-6000

N/P Company, P.O. Box 127, Temple City, Calif. ATlantic 7-9223

NRC Equipment Corp., 160 Charlemont St., Newton 61, Mass. DE-2-5800

Nacimco Products, 1090 Morena Boulevard, San Diego 10, Calif. BRowning 6-3020

Nammac Corp., 55 Glymont Road, Indian Head, Md. Riverside 82011
(See advertisement on page 62)

Narda Microwave Corporation, 118 Herricks Road, Mineola, N. Y. Pioneer 6-4650

Narda Ultrasonic Corp., 625 Main St., Westbury, L. I., N. Y. EDgewood 3-5400

Nash Controls, Inc. (Sales Outlet for Nash Tool & Engineering Inc.), 69-73 Summit St., Newark, N. J. (MI-2-7918)-(MI-2-7298)

Nash Engineering Co., Wilson Ave., So. Norwalk, Conn. VOlunteer 6-3351
(See advertisement on page 14)

Nashua Corporation, Chart Paper Division, 44 Franklin Street, Nashua, N. H. TUxedo 3-7711

Natel Engineering Co. Inc., 15922 Strathern Street, Van Nuys, Calif. STate 2-4161

National Appliance Co., 7634 S. W. Capitol Hwy., Portland 19, Ore. CHerry 6-3316

National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y. MUrray Hill 7-8000

National Cash Register Company, Main & K Streets, Dayton 9, Ohio BAldwin 6-1411

National Electronics Inc., 628 North St., Geneva, Ill. CEnter 2-4300

National Electronics, P.O. Box 1237, Sheridan, Wyo. OR-4-7644

National Instrument Co., Inc. 4119-4127 Fordleigh Rd., Baltimore 15, Md. ROgers 4-3304

National Instrument Labs., Inc., 848 Evarts St., N. E., Washington 18, D. C. NOrth 7-7582
(See advertisement on page 30)

National Radiac Inc., 475 Washington St., Newark 2, N. J. MA 3-7524

National Semiconductors Ltd., 230 Authier St., Montreal 9, Canada Riverside 4-2946

National Spectrographic Laboratories, Inc., 6300 Euclid Ave., Cleveland 3, Ohio UTah 1-4664

National Standard Electronics Inc., 2 East End Ave., New York 21, N. Y. RH-4-4100

National Tel-Tronics Corporation, 52 St. Casmir Ave., Yonkers, N. Y. YOnkers 8-6100
(See advertisement on page 186)

National Time & Signal Corp., 21800 Wyoming Ave., Detroit 37, Mich. JOrdan 4-6281

National Ultrasonic Corp., 111 Montgomery Ave., Irvington 11, N. J. ESsex 1-0550

National Vulcanized Fibre Co., Maryland Ave. & Beech Sts., Wilmington 99, Del. OLympia 5-6371

Navigation Computer Corp., 1621 Snyder Ave., Philadelphia 45, Pa. HO 5-7700

Naybor Laboratories, Inc., E. V., 26 Manorhaven Blvd., Port Washington, N. Y. PORt Washington 7-4300

Neff Instrument Corporation, 2211 E. Foothill Blvd., Pasadena, Calif. SY-5-4308

Nems-Clarke Co., Div. of Vitro Corp. of Amer. 919 Jesup-Blair Drive, Silver Spring, Md. JUniper 5-1000

Neptune Meter Co., 19 West 50th St., New York 20, N. Y.

Nester Co., Inc., L. G., Buck & Sassafras Sts., Millville, N. J. TAylor 3-0254
(See advertisement on page 194)

Networks Electronic Corp., 14506 Oxnard St., Van Nuys, Calif. STate 2-3114

Neutronic Associates, Inc., 32 Tennessee Ave., Hempstead, L. I., N. Y. IV-9-9340

Newark Electronics Corp., Dept. BG-61, 223 W. Madison St., Chicago 6, Illinois
(See advertisement on page 177)

New Brunswick General Sheet Metal Works, 425-33 Cleveland Avenue, Highland Park, N. J. CHarter 9-1470

New Departure Div., General Motors Corp., 269 N. Main St., Bristol, Conn., LUdlow 2-6371

New England Gear Works Inc., South End Road, Southington, Conn.

New England Instrument Company, 1334 Main Street, Waltham, Mass. TWinbrook 9-8370

New England Transformer Co., Inc., 47 McGrath Highway, Somerville 43, Mass. SOmerset 6-6100

New Hampshire Ball Bearings, Inc., Peterborough, N. H. WAlnut 4-3311

New Hermes Engraving Machine Corp., 154 W. 14th St., New York 11, New York
(See advertisement on page 195)

New Jersey Meter Co., Inc., 350 Leland Ave., Plainfield, N. J. Plainfield 6-8010

New London Instrument Co., Inc., 82 Union St., New London, Conn. Gibson 3-8451

New York Transformer Co., Inc., 3rd Ave., Alpha, N. J. GLencourt 4-1143

Newage Industries, Inc., 222 York Rd., Jenkintown 21, Pa. TU 4-8494

Newark Controls Co., 15 Ward St., Bloomfield, N. J. Pilgrim 8-2971

Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J. HUmboldt 3-7700

Newman Corp., M. M., 79 Clifton Ave., Marblehead, Mass. NEptune 2-0637

Ney Co., J. M., Maplewood Ave., Bloomfield, Conn. CHapel 2-2281

Niagara Frontier Division, Bell Aerosystems Co. P.O. Box 1, Buffalo 5, N. Y. BUtler 5-7851 (Niagara Falls)

Nicholson and Co., W. H., 12 Oregon St., Wilkes-Barre, Pa. VAlley 4-8701

Non-Linear Systems, Inc., P.O. Box 728, Del Mar, Calif. SKyline 5-1134
(See advertisement on page 129, 124)

Norbatrol Electronics Corp., 456 Collins Ave., Pittsburgh 6 Pa. EMerson 2-2020

Norcross Corp., 247 Newtonville Ave., Newton 58, Mass. DEcatur 2-3410
(See advertisement on page 132)

Norden Division of United Aircraft Corp., 58 Commerce Rd., Stamford, Conn. DAvis 5-2611

Norgren Company, C. A. 3400 South Elati, Englewood, Colo. SUnset 1-5583

Norman Hardy Associates, Box 97, Wyncote, Penna. TUrner 7-3055

North American Electronics, Inc., 71 Linden St., W. Lynn, Mass. LYnn 8-4800

North American Mfg. Co., 4455 E. 71st St., Cleveland 5, O. BRoadway 1-6000

North Atlantic Industries, Inc., Terminal Drive, Plainview, Long Island, N. Y. OVerbrook 1-8600

North Electric Co., 553 So. Market St., Galion, O. HO 8-2420

North Hills Electric Co., Inc., 402 Sagamore Ave., Mineola, L. I., N. Y. Pioneer 7-0555

North Hills Electronics, Inc., Alexander Place, Glen Cove, L. I., N. Y. ORiole 1-5700
(See advertisement on page 104)

North Shore Nameplate, 1270 N. W. 165th St., N. Miami Beach 69, Fla.

Northeast Electronics Corp., P.O. Box 435, Concord, N. H. CApitol 5-6641

Northeast Scientific Corporation, 39 Wetherbee St., Acton, Mass. COlonial 3-7706

Northeastern Engrg., Inc., 25 S. Bedford St., Manchester, N. H. NAtional 2-6485
(See advertisement on page 198)

Northern Radio Company, Inc., 143-149 West 22nd St., New York 11, N. Y. WAtkins 9-9117
(See advertisement on page 86)

Northfield Precision Instrument Corp., 4100 Austin Blvd., Island Park, L. I., N. Y. GEneral 1-1112

Norwalk Thermostat Co., 100 N. West St., Norwalk, Ohio Telephone 66-3082-2

Norwood Controls, 934 Washington St., Norwood, Mass. NOrwood 7-4010

Nuclear-Chicago Corp., 333 East Howard Ave., Des Plaines, Ill. VAnderbilt 7-4456

Nuclear Corp. of America, Instr. & Research Div., 2 Richwood Place, Denville, N. J. OAkwood 7-4200

Nuclear Development Laboratory, P.O. Box 7034, Kansas City 13, Mo. DElmar 3-7692

Nuclear Electronics Corp., 2925 N. Broad St., Philadelphia 32, Penna. BAldwin 6-2300

Nuclear Materials and Equipment Corp., Apollo, Pa. GRover 2-8411

Nuclear Measurements Corp., 2460 N. Arlington Ave., Indianapolis 18, Ind. LI 6-2415
(See advertisement on page 131)

Nuclear Ohio, Inc., 27105 Knickerbocker Road, Cleveland 40, Ohio TR-1-6295

Nuclear Products Company, 15635 Saranac Road, Cleveland 10, Ohio VL-1-5940

Rep—N. Y. State (except Metro), N. Pa.
The Carl A. Pearson Co., Inc.
232 Winston Rd. N., Rochester 10, N. Y.
BUtler 8-2526

Nucleonic Corp. of America, 196 Degraw St., Brooklyn 31, N. Y. MAin 4-7370

Nucleonic Products Co. Inc., 1601 Grande Vista Ave., Los Angeles 23, Calif. ANgelus 2-3503

Nurnberg Thermometer Co., Scientific Div., 124 Livingston St., Brooklyn 1, N. Y. Tri-5-2393

Nylon Molding Corp., 141 South Ave., Garwood, N. J. SUnset 9-1414

O

O. K. Machine & Tool Corp., 551 East 179th St., Bronx 57, N. Y. CYpress 8-0900
(See advertisement on page 195)

OPW—Jordan, Dept. IC, 6013 Wiese Rd., Cincinnati 13, Ohio. EL-1-1352

Oak Manufacturing Co., 1260 Clybourn Ave., Chicago 10, Ill. MO 4-2222

Offner Electronics, Inc., 3900 River Road, Schiller Park, Ill. GLadstone 1-0050

Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J. MUrdock 8-3400
(See advertisement on page 138)

Ohio Carbon Co., 12508 Berea Rd., Cleveland 11, Ohio CL 2-6100

Ohio Chemical & Surgical Equipment Co., Div. of Air Reduction Co., Inc., 1400 E. Washington Ave., Madison 10, Wis. ALpine 6-5421

Ohio Semiconductors, Inc., 1035 W. Third Ave., Columbus 8, Ohio. AX 4-4938

Ohmart Corp., 2236 Bogen St., Cincinnati 22, Ohio. PA-1-2202
Detroit Representative
The Basic Service Corp.
16544 Plymouth Rd., Detroit 27, Mich.
VErmont 7-8820

Ohmite Manufacturing Co., 3601 Howard St., Skokie, Ill. ORchard 5-2600

Oil Well Water Locating Company, 2230 Lemon Ave., Long Beach 6, Calif. GArfield 6-1789

Oilgear Co., 1560 W. Pierce St., Milwaukee 4, Wis. MItchell 5-6715

Okonite Co., 220 Passaic Street, Passaic, N. J. Prescott 7-0400

Olympic Instruments, Inc., Vashon, Wash. HOward 3-5611
(See advertisement on page 140)

Omicron Company, P.O. Box 907, Glendale, Calif. VI-9-5007

Opad Electric Co., 43-20 Walker St., New York 13, N. Y. WOrth 6-0380
(See advertisement on page 116)

Operating & Maintenance Specialties, Dep't A, 300 West Third St., P.O. Box 188, Charlotte 1, N. C. FR-5-6079
(See advertisement on page 43)

Optical Coating Lab., Inc., 2789 Giffen Ave., Santa Rosa, Calif. LIberty 5-6446

Optics Mfg. Corp., Amber & Willard Sts., Philadelphia 34, Pa. GA 5-3222

Optimized Devices, Inc., 864 Franklin Ave., Thornwood, N. Y. ROgers 9-6110

Opto-Metric Tools Inc., 137 Varick St., New York 13, N. Y. ORegon 5-9076

Optron Laboratory, 2725 Salem Ave. (Box 25 D. V. Sta.), Dayton, Ohio CHestview 4-1898

Orbitran Co., Inc., 11487 Woodside Ave., Lakeside, Calif. HIckory 3-6832

Oregon Electronic Mfg. Co., 2105 S. E. 6th Ave. Portland 14, Oregon BEImont 6-9292

Ortho Filter Corp., 7-11 Paterson St., Paterson 1, N. J. MU 4-5858

Oryx Company, 12804 Ventura Blvd., Sherman Oaks, Calif. STate 8-1013 TRiangle 3-4874

Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis. MElrose 7-4445

Oritron Corporation, 37-06 48th Ave., Long Island City 1, N. Y. EN-1-1752

Owen Laboratories, Inc., 55 Beacon Place, Pasadena, Calif. MUrray 1-6901
(See advertisement on page 120)

Oxford Engineering Company, 47A River Street, Wellesley Hills 81, Mass. CEdar 5-7770

Ozone Research & Equip. Corp., 3840 N. 40th Ave., Phoenix, Arizona. AP 8-5452

P

P. B. R. Manufacturing Co., H & Luzerne Sts., Philadelphia 24, Pa. GArfield 6-8032

PCA Electronics, Inc., 16799 Schoenborn St., Sepulveda, Calif. EMpire 2-6761

P & H Electronics, Inc., 424 Columbia, Lafayette, Ind. SH 2-8361

PIC Automation Controls Div. of General Controls Co., 8050 McCormick Blvd., Skokie, Ill. IRving 8-2223
Detroit Representative
The Basic Service Corp.
16544 Plymouth Rd., Detroit 27, Mich.
VErmont 7-8820

PIC Design Corp., 477 Atlantic Ave., East Rockaway, N. Y. LYnbrook 3-6470

P. K. Industries, Inc., 27 Forete Ave., North Arlington, N. J.

PRD Electronics, Inc., 202 Tillary Street, Brooklyn 1, N. Y. ULster 2-6800

P S I Engrg. Co., Div. of IMC Magnetics Corp., N. Y., 6058 Walker Ave., Maywood, Calif. LUdlow 3-6785

P-W Industries, Inc., 11200 Roosevelt Blvd., Philadelphia 15, Pa.
(See advertisement on page 205)
Rep—N. Y. State (except Metro), N. Pa.
The Carl A. Pearson Co., Inc.
272 Winton Rd. N., Rochester 10, N. Y.
BUtler 8-2526

Pace Electrical Instruments Co., Inc., 70-31 84th St., Glendale 27, L. I., N. Y.

Pace Engineering Co., 13035 Saticoy St., No. Hollywood, Calif. PO 5-0453

Pacific Electronic Controls Corporation, 1001 S. Mountain Ave., Monrovia, Calif. ELliott 9-3255

Pacific Instrument Co., 4526 East 12th St., Oakland 1, Calif. KE-2-2035

Pacific Semiconductors, Inc., 10451 W. Jefferson Blvd., Culver City, Calif. UPton 0-4881

Pacific Technical Co., 2047 Sawtelle Blvd., Los Angeles 25, Calif. GRanite 70455

Pacific Transducer Corp., 11836 W. Pico Blvd., Los Angeles, 64, Calif. GR 81134

Pacific Universal Products Corp., 168 Vista Ave., Pasadena, Calif. MUrray 1-7646

Packard Bell Computer Corp., 1905 Armacost Ave., Los Angeles 25, Calif. GRanite 8-4247

Packard Bell Electronics Corp., Technical Products Div., 12333 W. Olympic Blvd., Los Angeles 64, Calif.

Packard Instrument Company, Inc., Box 428, La Grange, Ill. HUnter 5-6330

Pacsol Div. of Illinois Tool Works, 500 E. Franklin Ave., El Segundo, Calif. ORegon 84931

Palmer Thermometers Inc., 2501 Norwood Ave., Cincinnati 12, Ohio. MElrose 1-1500
(See advertisement on page 67)

Texas-Louisiana Representative
Esch and Associates, Inc.
108 Portwood, Houston 11, Texas
WAlnut 8-3357

Palo Laboratory Supplies, Inc., 81 Reede St., New York 7, N. Y. COrtlandt 7-0075

Palos Optical Co., P.O. Box 26, Palos Heights, Ill. GIbson 8-0455

Pancro Mirrors, Inc., 2958 Los Feliz Blvd., Los Angeles 39, Calif. NOrmandy 1-2141

Panduit Corp., 14481 Waverly Ave., Midlothian, Ill. HIllop 5-3134
(See advertisement on page 193)
Rep—Ohio, Indiana, Kentucky
Forrest C. Valentine, Inc.
511 Ft. Wayne Bank, Ft. Wayne, Ind.
Anthony 9122
12417 Cedar Rd., Cleveland Hgts 6, Ohio.
FA-1-0266

Panellit-A Div. of ISI, Inc., 7401 N. Hamlin Ave., Skokie, Ill. ORchard 5-2500

Panoramic Radio Products, Inc., 520 South Fulton Ave., Mt. Vernon, N. Y. OWens 9-4600

Pantex Mfg. Corp., 521 Roosevelt Ave., Central Falls, R. I. PAwtucket 2-7500
Representative—Southern Controls
5033 Urbana, Houston 27, Texas
MOhawk 6-0386

Paraham, Inc., 13000 Yukon Ave., Hawthorne, Calif. OSborne 9-3393
(See advertisement on page 90, 109)

Paragon Electric Co., 1600—12th St., Two Rivers, Wis. Telephone 303

Paramount Paper Tube Corp., 614 So. Lafayette St., Fort Wayne 2, Ind. A-4197

Paraplegics Manufacturing Company Inc., 10048 Franklin Ave., Franklin Park, Ill. GL-51497

Park Nameplate Co., Inc., 34-10 Linden Place, Flushing 54, N. Y. FLushing 9-7000

Parker Aircraft Co., 5827 W. Century Blvd., Los Angeles 45, Calif. ORchard 0-1221 SPring 6-1221

Parker Electronics Co., 375 Fairfield Ave., Stamford, Conn. DAvis 3-0954

Parker-Hannifin Corp., 17325 Euclid Ave., Cleveland 12, Ohio. KEnmore 1-3000

Parker-Kalon, a div. of General American Transportation Corp., 1 Peekay Drive, Clifton, N. J. GRegory 1-1000

Parko Electronics Co., 2639 So. LaCienega Blvd., Los Angeles 34, Calif. UPton 0-8618

Parks-Cramer Company, Process Heating Dep't, Newport St., Fitchburg, Mass. DIamond 3-3796

Par-Metal Products Corp., 22-62 49th St., Long Island City 3, N. Y. AStoria 8-8905

Parr Mfg. Corp., 44 Austin St., Newark 2, N. J. HI 3-2340

Parr Instrument Co., 211 53rd St., Moline, Ill. Telephone 2-7716

Parsons Co., Ralph M., Electronics Div., 151 S. De Lacey Ave., Pasadena, Calif. MUrray 1-0461

Parthow Corp., 252 Campion Road, New Hartford, N. Y. Utica SW-7-2222

Pass & Seymour, Inc., 50 Boyd Ave., Syracuse 9, N. Y. HOward 8-6211

Paterson Co. Inc., Stuart D., 65 Culver Parkway, Rochester 9, N. Y. BU-8-2947

Paul, F. H. & Stein Bros., Inc., 235 Fifth Ave., New York 16, N. Y. MUrray Hill 4-6370

Pearce-Simpson, Inc., 3950 N. W. 28th St., Miami 42, Fla. NE-3-6976

Pearson Electronics, Inc., 707 Urban Lane, Palo Alto, Calif. DAvenport 6-7285

Pee-Wee Molding Corp., 1720 Atlantic Ave., Brooklyn 13, N. Y. PR 4-3441

Peer Incorporated, 1200 Milton St., Benton Harbor, Mich. WA-5-8828

Pegasus Laboratories, Inc., 3500 West Eleven Mile Road, Berkley, Mich. LIncoln 7-8700-1

Penberthy Mfg. Co. Div., Buffalo-Eclipse Corp., 1242 Hadden Ave., Detroit 2, Mich.

Penn Instruments Div., Burgess-Manning Co., 4111 Haverford Ave., Philadelphia 4, Pa.
Pittsburgh and Buffalo Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa. WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3229

Penn Optical & Instrument Co., 19642 Bristol St., Costa Mesa, Calif. Kimberly 5-1165
(See advertisement on page 138)

Penn-East Engrg. Corp., Industrial Ave., Kutztown, Pa. OVerbrook 3-7307

Pennsylvania Fluorocarbon Co., Inc., 1115 No. 38th St., Philadelphia 4, Penna. EVergreen 6-0603

Pennsylvania Pump & Compressor Co., Easton, Pa.

Penswood Numechron Co., 7249 Frankstown Ave., Pittsburgh 8, Pa.
(See advertisement on page 92)

Perfecting Service Company, 332 Atando Ave., Charlotte 6, N. C. FRanklin 6-4811

Performance Measurements Co., 15301 W. McNichols Rd., Detroit 3, Mich. TOwnsend 9-6400

Perkin Engrg. Corp., 345 Kansas St., El Segundo, Calif. SP-22171

Perkins & Son, B. F., Inc., Tester Div., Box 388, Holyoke, Mass. JE-4-5646

Permag Corp., 88-06 Van Wyck Expressway, Jamaica 18, N. Y.
(See advertisement on page 196)

Permanent Magnet Co., 4437 Bragdon St., Indianapolis 26, Ind. LIberty 7-1336

Permutit Co., a division of Pfaudler Permutit Inc., 50 West 44th St., New York 36, N. Y. OXford 7-6600

Peschel Electronics, Towners, Patterson RD. 1, N. Y. TRinity 8-3251

Pesco Products Division, Borg-Warner Corp., 24700 N. Miles Rd., Bedford, Ohio AXminster 2-6100

Peterson Co., Inc., Stuart D., 65 Culver Parkway, Rochester 9, N. Y. BU 8-2947

Petrometer Corp., 43-22 10th St., Long Island City 1, N. Y. STillwell 4-8042
(See advertisement on page 37)

Pflatz & Bauer, Inc., 350 5th Ave., New York 1, N. Y. CHickering 4-0485

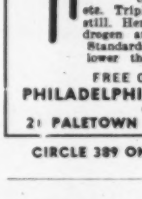
Phalo Plastics Corp., 530 Boston Turnpike, Shrewsbury, Mass. VIking 4-4021

Phaostron Instrument & Electronics Co., 151 Pasadena, Calif. CL-5-1471

Philadelphia Insulated Wire Co., New Albany Road, Moorestown, N. J. HEImont 5-6700

Philadelphia Scientific Glass Co., 468 W. Paletown Rd., Quakertown, Penna. KE-6-7801
(See advertisement on page 227)

Fixed Set Thermostats



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SETTING RANGE: —35°C to 370°C
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Guaranteed sensitivity . . . year-in, year-out reliability . . . accurate control of temperature in ovens, electronic equipment, baths, ducts, freezers, fire alarms, incubators, analytic instruments, etc. Triple distilled mercury; filled at still. Hermetically sealed with dry hydrogen at 75 psi. Calibrated to Bur. Standards accuracy. Priced 10% to 15% lower than competitive lines.

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21 PALETOWN RD., QUAKERTOWN, PA.

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Philamon Laboratories, Inc., 99 Hopper St., Westbury, L. I., N. Y. EDgewood 3-1700

Philbrick Researches, Inc., George A., 285 Columbus Ave., Boston 16, Mass. COmmonwealth 6-5375

Philco Corp., Govt. & Indus. Div., 4700 Wissahickon Ave., Philadelphia 44, Pa. VIctor 3-4000

Phillips & Co., H. A., 3255 W. Carroll Ave., Chicago 24, Ill. NEvada 8-1116

Phillips Control Corp., 59 W. Washington St., Joliet, Ill. SA-3-3431

Phillips-Drucker, Inc., P.O. Box 567, Astoria, Oregon. FAirfax 3-3241

Phipps & Bird, Inc., 303 S. 6th St., Richmond 5, Va. MI 3-9163

Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia 40, Pa. BA 8-7417

Photobell Co., Inc., 43 Vesey St., New York 7, N. Y. WOrth 2-6739

Photocon Research Products, 421 N. Altadena Dr., Pasadena, Calif. SYcamore 2-4131

Photomation, Inc., 96 S. Washington Ave., Bergenfield, N. J. DUmont 4-3411

Photoplating Co., 215 N. E. 5th St., Minneapolis 13, Minn. FE 5-1229

Photron Instrument Company, 6516 Detroit Ave., Cleveland 2, Ohio ATlantic 1-7020
(See advertisement on page 93)
Representative—S. Calif., Ariz., N. Mex.
DynaSales Company
1226 S. Atlantic Blvd., Los Angeles 22, Calif. ANgelus 8-1175

Physical Sciences Corporation, 389 North Fair Oaks Ave., Pasadena, Calif. MUrray 1-5644

Physics Research Laboratories, Inc., P. O. Box 555, Hempstead, N. Y. IVanhoe 3-8299
(See advertisement on page 101)

Pickard & Burns, Inc., Electronic Products Dept., 240 Highland Ave., Needham 94, Mass. HIllcrest 4-8345

Picker X-Ray Corp., Nuclear Instrument Div., 25 S. Broadway, White Plains, N. Y. WHite Plains 8-0080

Pieso Crystal Co., 285 E. Pomfret St., Carlisle, Pa. Telephone 1495

Pimex, Inc., 18 E. 60th St., New York 22, N. Y.

Pittsburgh Instrument & Machine Co., 1026 Reedsdale St., Pittsburgh 33, Pa. FAirfax 1-8012

Pittsburgh Lectrodryer, Div. McGraw-Edison Co., P. O. Box 1766, Pittsburgh 30, Pa. GRant 1-8782

Pivot Co., 2 Aster Terrace, Mendham, N. J. LI 3-4984

Planet Instrument, Inc., 616 S. Lafayette St., Fort Wayne, Ind. Telephone E-1495

Plastic Capacitors, Inc., 2620 North Clybourn Ave., Chicago 14, Ill. DIversey 8-3735

Plumb Co. Inc., D. S., 73-77 Norfolk St., Newark, N. J. HUmboldt 2-1865

Pneu Hydro Valve Corp., 52 Horse Hill Rd., Cedar Knolls, N. J. JEfferson 8-7200

Pneumatic Scale Corp., Ltd., 72 Newport Ave., Quincy 71, Mass.

Pneumaticount, Inc., 3400 N. E. 54th Ave., Portland, 13, Oregon ATlantic 7-0288

Pneumercator Co., Inc., 305 E. 46th St., New York 17, N. Y. PL 5-6033

Polarad Electronics Corporation, 43-20 34th St., Long Island City 1, N. Y. EXeter 2-4500

Poliak Corp., Joseph, 85 Freeport St., Boston 22, Mass. AVenue 2-9550
(See advertisement on page 179)

Polymer Corp., 2120 Fairmont Ave., Reading, Pa. FR 6-5791

Polyphase Instrument Co., E. 4th St., Bridgeport, Pa. BRoadway 9-4660

Poly-Scientific Corp., Route 460, North, Blacksburg, Va. PRescott 2-8212

Poole Instruments, Inc., 150 Express St., Box 1532, Dallas 21, Texas. RIverside 7-2353

Porta-Trace, Inc., 50 Wall St., Binghamton, N. Y. RA 3-7510

Porter, Inc., Geo. K., Bethlehem Pike, Hatfield, Pa. ULysses 5-9519

Post Electronic Products, Reid Brothers Co., Inc., 12 Lothrop Street, Beverly, Mass. WA 2-0811

Potter Aeronautical Corp., Route #22, P. O. Box 1123, Union, N. J. MUrdock 6-3010

Potter & Brumfield, Division of American Machine & Foundry Co., Princeton, Ind. FUlton 5-5251

Potter Instrument Co., Inc., Sunnyside Blvd., Plainview, N. Y. OVerbrook 1-3200

Power Designs, Inc., 1700 Shames Dr., Westbury, N. Y. Edgewood 3-6200
(See advertisement on page 115)

Powertron Ultrasonics Corp., Patterson Pl., Roosevelt Field, Garden City, L. I., N. Y. Pioneer 1-3221

Power-Tronic Systems, Inc., 10-12 Pine Court, New Rochelle, N. Y. NE-2-2200

Powers Regulator Co., 3400 Oakton St., Skokie 10, Ill. ORchard 3-6700

Pratt & Whitney Co., Charter Oak Blvd., West Hartford 1, Conn. ADams 3-7561

Precise Measurements Co., Millbrook St., R. D. 1, Flemington, N. J. FLemington 900
(See advertisement on page 117)

Precision Apparatus Co., Inc., 70-31 84th St., Glendale 27, Long Island, N. Y. DA-6-3982

Precision Connectors Inc., P. O. Box 96, Mineola, L. I., N. Y. PI-7-4429

Precision Glass Products Co., 6137 Beechwood St., Philadelphia 38, Pa. GErmantown 8-8005

Precision, Inc., 4748 France Ave., No., Minneapolis, Minn. JU 8-9441

Precision Instrument Co., 1011 Commercial St., San Carlos, Calif. LYtell 1-4441

Precision Line Inc., 63 Main St., Maynard, Mass. TWin Oaks 7-2451

Precision Mechanisms Corp., 577 Newbridge Ave., East Meadow, L. I., N. Y. IVanhoe 3-8955

Precision Paper Tube Co., 2035 W. Charleston St., Chicago 47, Ill. AR 6-5200

Precision Products, Inc., 530 S. Quaker, Tulsa 20, Okla. DIamond 3-3116

Precision Products Co., Inc. of Waltham, 24 Bedford St., Waltham 54, Mass. TW 4-1400

Precision Recording Chart Co., 2430 E. Linden Ave., Linden, N. Y. HUnter 6-2102

Precision Resistor Co., 109 U. S. Hwy. #22, Hillside, N. J. BIgelow 3-3809

Precision Scientific Company, 3737 W. Cortland St., Chicago 47, Ill. CApitol 7-2600

Precision Thermometer & Instr. Co., 1434 Brandywine St., Philadelphia 30, Pa.
Pittsburgh and Buffalo Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa. WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-2229

Precision Tube Co., Inc., Church Road & Wissahickon Ave., North Wales, Pa. OXbow 9-4906

Preis Engraving Machine Co., H. P., 651 U. S. Highway 22, Hillside 5, N. J. MU-6-7736

Premier Metal Products Co., 337 Manida St., Bronx 59, N. Y. WY 1-6600
(See advertisement on page 173)

Premier Research Laboratories, Inc., 81 Seventh Avenue, New York 11, N. Y. ALgonquin 5-0700

Presin Co., 2014 Broadway, Santa Monica, Calif. EXbrook 3-9738

Pressure Products Industries Inc., 412 S. Warminster Rd., Hatboro, Pa. OS-5-1600

Price Electric Corporation, E. 2nd & Church Streets, Frederick, Md. MO 3-5141

Princeton Division of Curtiss-Wright Corp., P. O. Box 110, Princeton, N. J. SWinburne 9-0500

Pritchard, J. F. & Co. of Calif., 4625 Roanoke Pkwy., Kansas City 12, Mo. JE 1-9500

Probescope Co., Inc., 8 Sagamore Hill Drive, Port Washington, N. Y. Port Washington 7-8150

Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y. GLenmore 2-8380

Propulsion Development Labs., 1120 E. El Segundo Blvd., El Segundo, Calif.

Protection Controls, Inc., 7317 N. Lawndale Ave., Skokie, Ill. ROdney 3-2110

Pulse Engineering, Inc., 560 Robert Ave., Santa Clara, Calif. CHerry 8-6040

Pyle-National Company, 1334 N. Kostner Avenue, Chicago 51, Ill. Dickens 2-6300

Pyramid Instrument Corporation, 630 Merrick Road, Lynbrook L. I., N. Y. LYnbrook 3-5400.

Pyramid Plastics, Inc., 562 W. Polk St., Chicago 7, Ill. WAbash 2-5560
(See advertisement on page 204)

Pyro Service Co., 17121 Greeley, Detroit 3, Mich. TWinbrook 1-4028

Pyro-Electric, Inc., P. O. Box 152, 552 Lincoln Ave., Winnetka, Ill. HIllcrest 6-6290

Pyrometer Co. of America, Inc., 600 E. Lincoln Hwy., Penndel, Pa. HObart 4-1200

Pyrometer Instrument Co., Inc., 92 Portland Ave. Bergenfield 12, N. J. DUmont 4-5140
(See advertisement on page 49)

Q

Q.V.S. Inc., 20 N. 15th St., E. Orange, N. J. ORange 3-3996

Quan-Tech Laboratories, Inc., 60 Parsippany Blvd., Box 187, Boonton, N. J. DEerfield 4-9500

R

R-B-M Controls Div., Essex Wire Corp., 131 Godfrey St., Logansport, Ind. Telephone 5121

RCA, Defense Electronic Prods. Dept., Front & Cooper Sts., Camden, N. J., WO-3-8000 XPC-3482

RCA, Industrial Electronic Prods. Div., Front & Cooper Sts., Camden, N. J. WO-3-8000
West Virginia Representative
Electronic Specialty Co.
Delaware Ave. at Randolph St., Charleston 2, W. Va. DIckens 3-5656

RCA, Systems Support Dept., Front & Cooper Sts., Camden 2, N. J., WOodlawn 3-8000

RKL Controls, Inc. (was RKL Valve & Mfg.) Hainesport Industrial Park, Hainesport, N. J.
California Representative
Carkeek Engineering Co., Inc.
285 S. Euclid Ave., Pasadena, Calif. MUrray 1-0480

R. S. Electronics Corporation, 435 Portage Avenue, Palo Alto, Calif. DAvenport 1-1130

Rasino & Co., Inc., Jules, 20 West 47th St., New York 36, N. Y.
(See advertisement on page 70)

Racine Hydraulics & Machinery, Inc., Hydraulic Division, 2900 Albert St., Racine, Wis. MEirose 7-6721

Radex Corp., 2076 Elston Ave., Chicago 14, Ill. ARmitage 6-6900

Radiaphone Co., Inc., 600 E. Evergreen Ave., Monrovia, Cal. ELliott 8-2585

Radiation Inc., Melbourne, Fla. PArkway 3-1511

Radiation Applications, Inc., 36-40 37th St., Long Island City 1, N. Y. EMpire 1-2170

Radiation Counter Labs., Inc., 5121 W. Grove St., Skokie, Ill. ORchard 3-8700

Radiation Electronics Co., Div. of Comptometer Corp., 5600 Jarvis Ave., Chicago 48, Ill. SPring 8-2400

Radiation Instrument Development Lab., Inc., 61 East North Ave., Northlake, Ill. MUrray 1-2323

Radiation Research Corp., 1114 First Ave., New York 21, N. Y. TEmpleton 8-2513

Radio Condenser Co., Davis & Copewood Sts., Camden 3, N. J. EMerson 5-5500

Radio Frequency Labs., Inc., Powerville Rd., Boonton, N. J. DEerfield 4-3100
California Representative
Lorombe Engineering Co.
1020 S. Arroyo Pkwy., Pasadena, MUrray 2-3188
130 N. "B" St., San Mateo, DIamond 2-7057

Radionics Incorporated, Lafayette & Water Sts., Norristown, Pa. BRoadway 2-3656

Rahm Instruments Div., American Machine, 65 Rushmore St., Westbury, N. Y. EDgewood 3-4840

Railway Communications, Inc., 9351 E. 59th St., Raytown 33, Mo. FLeming 3-2100

Ram Meter Inc., 1100 Hilton Rd., Ferndale 20, Mich. Lincoln 7-1000

Ramapo Instrument Company, Inc., 8 First Street, Bloomingdale, N. J. Terminal 8-4586

Ramm Rectifier Co. Inc., 827 Faile Street, The Bronx 59, N. Y. DAyton 9-1636, DAyton 9-1637
(See advertisement on page 178)

Ramo-Wooldridge, Div. of Thompson Ramo Wooldridge Inc., 5500 W. El Segundo Blvd., Los Angeles 45, Calif. ORegon 8-0511

Ramsey Engineering Co., 1853 W. County Road C, St. Paul 13, Minn. MEirose 3-5150

Ranarex Div., Pfaudler Permutit Inc., 50 W. 44th St., New York 36, N. Y.

Ransom Research, 374 W. 8th St., Box 249, San Pedro, Calif. TErminal 2-1128

Rantec Corp., 23999 Ventura Blvd., Calabasas, Calif. DIamond 75445

Rapid Electric Co., 2881 Middletown Rd., Bronx 61, N. Y. TA-8-2200
(See advertisement on page 118)

Rapid Specialties Co., 325 W. Huron St., Chicago 10, Ill. DElaware 7-1440

Ratiray & Co., Inc., Geo., 101 New South Rd., Hicksville, N. Y.

Raydyne Corp., 2715 So. 4th St., Springfield, Ill. Lakeside 2-9122

Raymond Engineering Laboratory, Inc., Smith Street, Middletown, Conn. DIamond 7-5611

Rawson Electrical Instrument Co., Potter St., Cambridge 42, Mass. Kirkland 7-4041
(See advertisement on page 112)

Raytheon Co., Commercial Apparatus and Systems Division, 1415 Boston-Providence Turnpike, Norwood, Mass. NOrwood 7-6700

Raytheon Co., Equipment Division, 1089 Washington St., West Newton, Mass. DEcatur 2-7700

Raytheon Co., Industrial Components Division, 55 Chapel St., Newton 58, Mass. Bigelow 4-7500
(See advertisement on page 163)

Raytheon Co., Microwave & Power Tube Division, Foundry Ave., Waltham 54, Mass. TWinbrook 9-8400

Raytheon Co., Missile Systems Division, 520 Winter St., Waltham, Mass. TWinbrook 9-8000

Raytheon Co., Semiconductor Division, 215 First Ave., Needham Heights 94, Mass. Hillcrest 4-6700

Rea Magnet Wire Company, Inc., 3610 East Pontiac St., Fort Wayne 4, Ind. ANthony 5201

Record-A-Graph Paper Corp., 450 Atlantic Ave., Rochester 9, N. Y. Hubbard 2-2131

Red Jacket Co., Inc. 500 Bell Ave., Carnegie Pa. WA 1-1202

Pittsburgh Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa.
WAlnut 2-4212

Red Point Corp., 105 West Spazier Ave., Burbank, Calif. TH 2-4895

Redford Corp., Instrument Div., Lake Luzerne, N. Y. Telephone 3064

Reeve Electronics, Inc., 609 W. Lake St., Chicago 6, Ill. RAndolph 6-9755

Reeves-Hoffman Div., Dynamics Corp. of Am., 145 Cherry St., Carlisle, Pa. CHapel 2-5929

Reeves Instrument Corp., East Gate Blvd., Roosevelt Field, Garden City, N. Y. Pioneer 6-8100

Reeves Pulley Co., Div. of Reliance Electric & Engrg. Co., 1225 7th St., Columbus, Ind. DR 6-3211

Reeves Soundcraft Corp., 15 Great Pasture Rd., Danbury, Conn. Pioneer 3-7401

Reflectone Electronics, Inc., Post Road and Myano Lane, Stamford, Conn. DAvis 5-2251

Regent Controls, Inc., Harvard Ave., Stamford, Conn. FIreside 8-7734

Reisner Mfg. Co., W. H., Inc., 240 N. Prospect St., Hagerstown, Md. RE 3-2650

Relay Sales Inc., Dept. AC-25, P. O. Box 198, West Chicago, Ill. W. Chicago 1100

Relay Service Co., 1309-12 No. Pulaski Rd., Chicago 51, Ill. ALbany 2-2700

Reliance Instrument Div., Electro-Mech. Corp., 180 Glenwate Ave., Glencove, N. Y. ORiole 6-1040

Rembrandt, Inc., 6 Parmelee St., Boston 18, Mass. HI 5-8210

Resnik Co., L. C., 30 S. Sabinpondos St., Santa Barbara, Calif. WO-2-0947
(See advertisement on page 182)

Resn Resistor Corp., 117 Stanley Ave., Yonkers, N. Y. YOnkers 5-9850

Republic Flow Meters Co., Subsidiary of Rockwell Mfg. Co., 2240 Diversey Pkwy., Chicago 47, Ill. BRunswick 8-4000

Republic Lens Co., Inc., 31 E. 169th St., New York 52, N. Y. CYpress 3-2790

Republic Mfg. Co., 15655 Brookpark Rd., Cleveland 35, Ohio CLearwater 2-1800

Resdel Corporation, P.O. Box #217, Rio Grande, N. J. WIldwood 2-5642

Rese Engineering, Inc., 731 Arch St., Philadelphia 6, Pa. WAlnut 2-5841

Research Inc., 115 No. Buchanan Ave., Hopkins, Minn. WE 5-2156
(See advertisement on page 22)

Research Appliance Co., Box 307 Allison Park, Pa. STerling 2-2262
(See advertisement on page 126)

Research Controls, Inc., Box 5035, Tulsa, Okla. TEmple 9-9434

Research Council Inc., 151 Bear Hill Rd. Waltham 54, Mass. TW-9-8800

Research Industrial Laboratory of Electronics, Roslyn, Pa. TUrner 4-9098

Research Products Co., 1415 3rd St., So., St. Petersburg, Fla. Telephone 7-8462

Research Specialties Co., 200 S. Garrard Blvd., Richmond, Calif. BEacon 5-9110

Resistance Products Company, 914 South 13th Street, Harrisburg, Pa. CEdar 6-5081

Resistors, Inc., 5236 W. 26th St., Chicago 50, Ill. BIshop 2-1540

Resistron Company, 2487 E. Washington St., Pasadena, Calif. SYcamore 6-9612
(See advertisement on page 197)

Revere Corp. of America (Subsidiary of Neptune Meter Co.), North Colony Road, Wallingford, Conn. COlony 9-7701

Rex Rheostat Co., 149 Babylon Turnpike, Roosevelt, L. I., N. Y. FRexport 9-1030
(See advertisement on page 195)

Rheem Semiconductor Corp., 350 Ellis Street, Mountain View, Calif. YOrkshire 8-9211

Rhodes, Inc., M. H., 30 Bartholomew Ave., Hartford 6, Conn. JAckson 2-4265

Richards Co., Arklay S., Inc., 52 Winchester St., Newton Highlands 61, Mass. LAsell 7-4385

Richardson Co., 2889 Lake St., Melrose Park, Ill.

Richardson Camera Co., Inc., 2526 N. Ontario St., Burbank, Calif. VIctoria 94637

Richardson Scale Co., Van Houten Ave., Clifton, N. J. GRegory 1-3400

Richco Plastic Co., 3722 W. North Ave., Chicago 47, Ill., BE 5-2646

Richfield Coined Products Co., 722 Broad St., Clifton, N. J. GRegory 3-4381

Riehle Testing Machines Div., American Machine & Metals, Inc., East Moline, Ill. Telephone 3-4541

Riggs Nucleonics Corp., 135 W. Magnolia Blvd., Burbank, Calif. VIctoria 9-2481

Rinco, Inc., 7962 S. E. Powell, Portland 6, Oregon. FR 4-3259

Riverbank Laboratories, Dept. of Engrg., 1512 So. Batavia Ave., P. O. Box 65, Geneva, Ill. CEnter 2-2207

Rivett Lathe & Grinder, Inc., 18 Riverview Road, Brighton 35, Mass. STadium 2-4530

Rizon Electronics, Inc., 2414 Reedie Dr., Silver Spring, Md. LO 5-4578

Robbins Aviation Inc., 2350 E. 38th St., Los Angeles 58, Calif. LUdlow 9-5221

Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio FAirfax 3-6461

Robins Industries Corp., 36-27 Prince St., Flushing 54, N. Y. HI 5-7200

Robinson Orifice Fitting Co., 2830 Luge St., Los Angeles 23, Calif. ANgelus 9-1161

Robinson Technical Products, Inc. (formerly Robinson Aviation, Inc.), Teterboro Air Terminal, Teterboro, N. J. ATlas 8-2500

Robotomics, Inc., 4624 E. Garfield, Phoenix, Ariz. BR-5-2669

Rochester Div., Consolidated Electrodynamics, 1775 Mt. Read Blvd., Rochester 3, N. Y. GLenwood 3-7972

Rochester Manufacturing Co., Inc., 100 Rockwood St., Rochester 10, N. Y. BRowning 1-2020

Rockbestos Products Corp., Nicoll & Canner Sts., New Haven 4, Conn.

Rockland Insulated Wire & Cable Co., Inc., 36 Main St., Haverstraw, N. Y. HAverstraw 9-3103

Rockwell Engineering Co., 2141 E. 45th St., Indianapolis 5, Ind. CLifford 1-9453

Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa. CHurchill 1-8400

Rockwell Co., W. S., 2128 Eliot St., Fairfield, Conn.

Pittsburgh Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa.
WAlnut 2-4212

Rockwood Sprinkler Company—A Division of The Gamewell Co., 38 Harlow Street, Worcester 5, Mass. PL-6-2436

Rockale Mfg. Co., Inc., 6th Minor St., Emmaus, Pa. WOodring 59071

Rogan Brothers, Inc., 8031 N. Monticello, Skokie, Ill. ORchard 5-1233
(See advertisement on page 162)

Rohde & Schwarz Sales Co., 111 Lexington Ave., Box 275, Passaic, N. J.

Rome Cable Corp., 421 Ridge St., Rome, N. Y. FF-7-3000

Roman Panel Co., 8156 Orion Ave., Van Nuys, Calif. TR-3-4311 ST-1-2771

Ronningen Quick Coupling Filters, 6700 Ronningen Rd., Vicksburg, Mich.

Roots-Connersville Blower, Division of Dresser Industries, Inc., 900 West Mount Street, Connersville, Ind. Telephone 1500

Rosemount Engineering Co., 4900 West 78th Street, Minneapolis 24, Minn., WAlnut 7-7711

Ross Operating Valve Company, 120 East Golden Gate Ave., Detroit 3, Mich. FO-6-3340

Rotary Devices Corp., 40 Jay St., Englewood, N. J. LOwell 9-0433

Rotating Components Inc., 267 Green St., Brooklyn 22, N. Y. EVergreen 9-3490
(See advertisement on page 166)

Rotron Manufacturing Co., Inc., Woodstock, N. Y.

Rowe Engravers, Inc., 262 E. 16th St., Paterson 4, N. J. MUlberry 4-1426

Royal McBee Corp., Data Processing Div., Westchester Ave., Port Chester, N. Y. WEstmore 7-3000

Royco Instruments Inc., 874 Fabian Way, Palo Alto, Calif. DAvenport 5-2277

Royson Engineering Co., 101 N. Penn St., Hatboro, Pa. OS 5-2800
(See advertisement on page 229)

integrate measured variables on your present recorder

ROYSON INTEGRATOR KIT

FEATURES:

- integrates continuously while variable is being recorded.
- eliminates error, extra cost as recorder's servo is used.
- provides up to 1000 counts per minute.
- extra contact every ten counts for dual pipping pen action.
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Rubatex, Div. of Great American Industries, Inc., Bedford, Va. JUstice 6-2611

Rueckert Mfg. Co., 83 King St., East Greenwich, R. I. TUrner 4-2200

Ruge Associates, Arthur C., Inc., 21 Elm Ave., Hudson, N. H. TUxedo 2-5195

Ruska Instrument Corp., 6121 Hillcroft, Houston 36, Texas GYpsy 4-2533

Rust Industrial Co., Inc., 130 Silver St., Manchester, N. H. NAtional 3-3596

Rutherford Electronics Co., 8944 Lindblade St., Culver City, Calif. UPton 0-7393

Ryan Recording Thermometer Co., 851 Poplar Pl., Seattle 44, Wash. EAst 2-8600

S

Sage Electronics Corp., Country Club Road, East Rochester, N. Y. LU 6-8010

Sage Instruments, Inc., 9 Bank St., White Plains, New York WHite Plains 9-4121

San Diego Scientific Corp., 3434 Midway Drive, San Diego 10, Calif.

San Fernando Electric Mfg. Co., 1509 First St., San Fernando, Calif. EMpire 1-8681

Sanborn Co., 175 Wyman St., Waltham 54, Mass. TWinbrook 4-6300
(See advertisement on pages 94, 95)

Sanders Laboratories, 83 Uhland St., E. Rutherford, N. J. WEbster 9-2800

Sandy Manufacturing Co., 26 Maple Ave., Sellersville, Pa. ALpine 7-2989

Sangamo Electric Co., 11th & North Grand Ave., Springfield, Ill. KIngswood 4-0411

Saxonburg Ceramics, Inc., Box 157, Saxonburg, Penna. FL-2-1566
(See advertisement on page 201)

Scala Radio Co., 2814 19th St., San Francisco 10, Calif. VAlencia 6-2828

Seam Instrument Corp., 1811 W. Irving Park Road, Chicago 13, Ill. GR 7-7850
Pittsburgh and Buffalo Representative
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa. WA-3-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR 3-3229

Scanivalve Company, 631 30th St., San Diego 2, Calif. BElmont 4-2090

Scanivalve Sales Co., Box 9814, Arlington 9, Va. JAckson 5-4541

Scans Associates, Inc., 12940 Farmington Road, Livonia, Mich. GArfield 4-2700

Schade Valve Manufacturing Co., 2537 N. Bodine St., Philadelphia 33, Pa. GArfield 5-0300

Schaevitz Engineering, U. S. Route 130 & Schaevitz Blvd., Pennsauken, N. J. NOrmandy 2-8000

Schauer Manufacturing Corp., 4500 Alpine Ave., Cincinnati 42, Ohio SYcamore 1-3030

Scherr-Tumico, 200 Lafayette St., New York 12, N. Y. CAnal 6-3513

Schlumberger Corp., Ridgefield Instrumentation Div., P. O. Box 307 Grove Street, Ridgefield, Conn. IDlewood 8-2631

Schneider Mfg. Company, 2 Linden St., Reading, Mass. RE 2-0440

Schonstedt Engineering Company, 9170 Brookville Road, Silver Spring, Md. JU-5-8595

Schrader's Son, A., Division of Scovill Manufacturing Co., Inc., 470 Vanderbilt Ave., Brooklyn, New York 38, N. Y. NE-8-4000

Schueo Scientific—Division of Schueler & Co., 75 Cliff St., New York 38, N. Y. BEekman 3-4200

Schueler & Company, 75 Cliff St., New York 38, N. Y. BE 3-2813

Schutte and Koerting Co., State Road Cornwells Heights, Bucks County, Pa. MErcury 9-0900

Sciaky Bros., Inc., 4915 W. 67th St., Chicago 38, Ill. PORtsmouth 7-5000

Scientific-Atlanta, Inc., 2162 Piedmont Road, N.E., Atlanta 9, Ga. TRinity 5-7201

Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J. PIlgrim 3-2200

Scientific Industries, Inc., 15 Park Street, Springfield 3, Mass. REpublic 2-6233

Scientific Instrument Co., 617 Howard St., Detroit 26, Mich. WOodward 2-9060

Scientific Products Co., 4200 Deepwater Terminal Road, Richmond 24, Va. BElmont 38336

Scopes Company, Inc., P. O. Box 56, Monsey, N. Y. ELmwood 6-6339

Scott, Inc., H. H., Instrument Div., 111 Powder Mill Road, Maynard, Mass. TW 7-8801

Scott Aviation Corporation, 207 Erie Street, Lancaster, N. Y. REgent 5100, Ext. 223

Scott Testers, Inc., 166 Blackstone St., Providence 1, R. I. DExter 1-5650

Scrayco Mfg. Co., 201 Greene Ave., Middlesex, N. J. EL 6-2955

Sealtron Corporation, Reading Rd. at Amity, Cincinnati 15, Ohio VAlley 1-7444

Secoelectronics Inc., 5015 Penn Ave., S., Minneapolis 19, Minn. WAlnut 6-4545

Secon Metals Corporation, 7 Intervale Street, White Plains, N. Y. White Plains 9-4757

Security Controls Inc., 503 Franklin St., Buffalo 3, N. Y. LI 8535

Security Valve Company, 909 El Centro, So. Pasadena, Calif. MUrray 2-3303

Seegers Instrument Co., Inc., 515 Main St., Barrington, Ill. DU 1-2314
(See advertisement on page 45)

Seely Instrument Co., Inc., 377 Fourth St., Niagara Falls, N. Y. BUtler 2-1276

Seiscor, division of Seismograph Service Corp., Box 1590, 6200 E. 41st St., Tulsa 1, Okla. Riverside 3-1381

Seismograph Service Corp., 6200 E. 41st St., Tulsa, Okla. RI-3-1381

Selas Corp. of America, Dresher, Pa. MItchell 6-6600

Sel-Rex Corp., 75 River Road, Nutley 10, N. J. NU 2-5200

Semi-Alloys Inc., 550 South Fulton Ave., Mount Vernon, N. Y. MO-4-2800

Semi-Elements, Inc., Saxonburg Blvd., Saxonburg, Pa. FLanders 2-1548

Semon Bache & Co. (see Bache)

Sensitive Research Instrument Corp., 310 Main St., New Rochelle, N. Y. BEverly 5-2300
(See advertisement on pages 106, 107)

Sentry Equipment Corp., 856 East Armour Road, Oconomowoc, Wisc. LOgan 7-2515

Sequoia Wire & Cable Co., 2301 Bay Road, Redwood City, Calif. EMerson 9-0331

Serdex, Inc., 12 Bowdoin Sq., boston 14, Mass. CApitol 7-7160
(See advertisement on page 34)

Service Recorder Co., 1013½ Rockwell Ave., Cleveland 14, Ohio

Servo Systems Co., 14 Carmer Ave., Belleville 9, N. J. PLymouth 9-2875

Servo-Dynamics Corp., Main St., Somersworth, N. H. SOmersworth 1126

Servo-Tek Products Co., 1086 Goffle Rd., Hawthorne, N. J. HAwthorne 7-3100

Servometer Corporation, 222 Main Avenue, Passaic, N. J. PRescott 3-0474
(See advertisement on page 150)

Servonic Instruments, Inc., 640 Terminal Way, Costa Mesa, Calif. Midway 8-2427

Servonics, Inc., 822 N. Henry St., Alexandria, Va. TE 6-6800

Seton Name Plate Co., 50-ICS Fitch St., New Haven 15, Conn. FUlton 9-9581

Shakeproof Div. Illinois Tool Works, St. Charles Road, Elgin, Ill. SH-1-7900

Shallcross Mfg. Co., Preston St., Selma, N. C. WOodlawn 5-2341

Shand and Jurs Company, 2600 Eighth St., Berkeley 10, Calif. TH-8-2345

Shapiro and Edwards, 1130 Mission St., South Pasadena, Calif. BY-9-1886 MU-2-3054

Shaw Instrument Corporation, P. O. Box 46, Latrobe, Pa. KEystone 9-1625
(See advertisement on page 52)

Sheffield Corp., Subsidiary The Bendix Corp., Box 893, Dayton 1, Ohio. CLearwater 4-5377

Shepard Laboratories, Inc., Broad St. & Park Ave., Summit, N. J. CRestview 3-5255

Shielding, Inc., 314 North Read Ave., Riverton, N. J.

Shockley Transistor unit of Clevite Transistor, 1117 California Ave., Palo Alto, Calif. DAvenport 1-3121

Shore Instrument & Mfg. Co., Inc., 9035 Van Wyck Expressway Jamaica 35, N. Y. JAmaica 6-4098
(See advertisement on page 141)

Shure Brothers, Inc., 222 Hartrey Ave., Evanston, Ill. DAvis 8-0600

Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif. DAvenport 6-2060

Sierra Engineering Co., 123 E. Montecito Ave., Sierra Madre, Calif. RYan 1-9291

Sigma Instruments, Inc., 170 Pearl St., So. Braintree 85, Mass. Victor 3-5000

Sigmamotor Inc., 3 N. Main St., Middleport, N. Y. REpublic 5-3411

Sig-Trans, Inc., Haverhill Road, Amesbury, Mass. Amesbury 1476 & 1477

Silicon Transistor Corp., 150 Glen Cove Road, Carle Place, Long Island, N. Y. Pioneer 2-6100

Simmonds Aerocessories, Inc., 105 White Plains Rd., Tarrytown, N. Y. MEdford 1-7500

Simmonds Precision Products, Inc., 105 White Plains Road, Tarrytown, N. Y. ME 1-7500

Simplex Valve & Meter Co., a division of Pfaudler-Permutit Inc., 7 East Orange St., Lancaster, Pa. EXpress 4-3792

Simpson Electric Co., 5200 W. Kinzie St., Chicago 44, Ill. Estebrook 9-1121

Simpson Optical Mfg. Co., 3200 W. Carroll Ave., Chicago 24, Ill. Van Buren 6-3030
(See advertisement on page 163)

Sittler Corporation, 18 North Ada Street, Chicago, Ill. SEeley 3-4616

Size Control Co., Div. of American Gage & Machine Co., 2500 W. Washington Blvd., Chicago 12, Ill. MOnroe 6-6710

Skinner Electric Valve Div., 95 Edgewood Ave., New Britain, Conn. BAldwin 5-6421

Skydyne, Inc., River Road, Port Jervis, N. Y. 3-2341

Slaughter Co., Inc., 521 Young St., Piqua, Ohio. PIqua 3-5936

Slip Ring Company of America, 5458 W. Washington Blvd., Los Angeles 16, Calif. WEbster 1-8158

Slocomb Co., J. T., 68 Matson Hill Rd., So. Glastonbury, Conn. MEdford 3-9485

Small Motors Inc., 2076 Elston Ave., Chicago 14, Ill. ARmitage 6-6900

Smith, Inc., Arthur F., 311 Alexander St., Rochester 4, N. Y. BAker 5-4670

Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis. UP 3-3000

Smith Mfg. Co., Inc., E. C., Forrest & Hector Sts., Conshohocken, Pa. TAylor 8-4790

Smith Welding Equipment Corp., 2833 4th St. S.E., Minneapolis 14, Minn. FEderal 1-1311

Smith-Florence, Inc. 4228—23rd Avenue West, Seattle 99, Wash. ATwater 4-0170

Snap-Tite, Inc., 201 Titusville Rd., Union City, Pa.

Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill. SP-2-6400

Sola Electric Co., 1717 Busse Road, Elk Grove, Ill. HE-6-2900

Solid State Electronics Co., 15331 Rayen St., Sepulveda, Calif. EMpire 4-2271

Solid State Products, Inc., 1 Pingree St., Salem, Mass. Pioneer 5-2900

Solitron Devices Inc., 67 South Lexington Avenue, White Plains, N. Y. WH 6-7501

Sonex, Inc., Twenty East Herman St., Philadelphia 44, Pa. Victor 2-4400

Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn. TE-6-4571

Sorvall, Inc., Ivan, Pearl St., Norwalk, Conn. VI 7-2491

Southwestern Industrial Electronics, 10701 Westheimer Road, Houston 27, Texas. HO 5-3471

Space Products, 2235 E. Artesia Blvd., Long Beach 5, Calif. MEtcalf 00622

Sparling Equipment Div., Hersey-Sparling Motor Co., 225 North Temple City Blvd., El Monte, Calif. CUmberland 3-7101

Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y. JAckson 2000

Special Instruments Laboratory Inc., 313 W. Vine Ave., Knoxville 2, Tenn. Telephone 50218

Special Screw Products Co., 100 Northfield Rd., Bedford, Ohio BEdford 2-6565
(See advertisement on page 181)

Specialties, Inc., Skunks Misery Rd., Syosset, L. I., N. Y. WAlnut 1-2345

Spectra Electronics Corp., 250 E. Third St., Mount Vernon, N. Y. MOunt Vernon 9-1378

Spectracoat, Inc., 248 Harbor Blvd., Belmont, Calif. LY-1-0358

Spectrol Electronics Corp., 1704 So. Del Mar Ave., San Gabriel, Calif. ATlantic 7-9761; 1230 Shames Dr., Westbury L. I., N. Y.

Spectrum Instruments, Inc., Box 61, Steinway Station, Long Island City 3, N. Y. AStoria 8-8033

Spellman High Voltage Co., 1930 Adee Ave., Bronx, N. Y.
(See advertisement on page 116)

Spence Engineering Co., Inc., 29-41 Grant Street, Walden, N. Y. PRescott 2-4501
(See advertisement on page 61)

Spencer-Kennedy Laboratories, Inc., 1320 Soldiers Field Rd., Boston 35, Mass.

Sperry Gyroscope Company, Division of Sperry Rand Corp., Great Neck, N. Y. Fieldstone 7-3600

Sperry Microwave Electronics Co. Div. of Sperry Rand Corp., Clearwater, Fla. REdwood 6-4161

Sperry Phoenix Co., Division of Sperry Rand Corp., Deer Valley Road at Nineteenth Ave., Phoenix, Arizona WI-3-2311

Sperry Piedmont Co., Route 29, 2nd Hydraulics Road, Charlottesville, Va. Telephone 3-6111

Sperry Products Co. Div of Howe Sound Co., Shelter Rock Road, Danbury, Conn. Pioneer 8-3581

Sprague Engineering Corp., 19300 So. Vermount Ave., Gardena, Calif.

Sprengnether Instrument Co., W.F., 4567 Swan Ave., St. Louis 10, Missouri JE-5-1662
(See advertisement on page 85)

LEIGH Pocket Tools

No. 787 Carbide and Steel Scriber $2.50

Points reverse for personal safety. Approximately ½"x3/64" dia., solid carbide rod brazed into steel (*not just tipped*) permits many regrindings.

No. 634 Combination Scriber and Permanent Magnet $2.25

Postpaid with money order or check.

SPRING SPECIALTY CO.

23 N. Fifth Ave. • Maywood, Ill.

CIRCLE 391 ON READER-SERVICE CARD

Spring Specialty Co., 23 North 5th Ave., Maywood, Ill. FIllmore 4-4602
(See advertisement on page 231)

Square D Company, 4041 North Richards Street, Milwaukee 12, Wisc. EDgewood 2-2600

Stackpole Carbon Co., Stackpole St., St. Marys, Pa. TErminal 41-521

Stafford Mfg. Co., Inc., 155 58th St., Brooklyn 20, N. Y. HYacinth 2-6000
(See advertisement on page 167)

Standard Cabinet Co., 53 Washington Ave., Carlstadt, N. Y.
(See advertisement on page 26)

Standard Controls, Inc., 1130 Poplar Place, Seattle 44, Wash. EAst 4-8888 and 3-8545

Standard Electric Time Co., 89 Logan St., Springfield 2, Mass. REpublic 2-1142

Standard Electrical Products Co., 2240 East 3rd St., Dayton 3, Ohio. CLearwater 2-1191

Standard Electronics Co., 1611 W. 63rd St., Chicago 36, Ill. PR 8-4222

Standard Gage Co., Inc., 70 Parker Ave., Poughkeepsie, N. Y. GR 1-3100

Standard Instrument Corp., 657 Broadway, New York 12, N. Y. ORegon 3-3200

Standard Pressed Steel Co., Box 1282, Jenkintown, Pa. TUrner 4-7300

Standard Screw Co., 2520 Washington Blvd., Bellwood, Ill. EStex 8-7400

Standard Unbreakable Watch Crystals, Inc., 129 East 144th St., Bronx, New York
(See advertisement on page 141)

Stanford Glassblowing Labs., Inc., 971 Commercial St., Palo Alto, Calif. DA-1-2525

Stanpat Co., 150-42 12th Rd., Whitestone 57, N. Y. FLushing 9-1693
(See advertisement on page 201)

Staples Co., Air Sampler Div., 777 Fifth Ave., Brooklyn 32, N. Y. SOuth 8-2525

Starrett Co., L. S., 1-165 Crescent St., Athol, Mass. CHurchill 9-3551

States Company, 19 New Park Ave., Hartford 6, Conn.
(See advertisement on page 185)

Statham Instruments, Inc., 12401 W. Olympic Blvd., Los Angeles 64, Calif. BRadshaw 20371

Statolet Corp., 65-71 St., Guttenberg, N. J. UN-7-6694

Stavid Div., Lockheed Electronics Co., U. S. Highway 22, Plainfield, N. J. PL 7-1600

Sta-Warm Electric Co., 957 North Chestnut St., Ravenna, Ohio AXminister 6-6462

Stein Engineering Services, Inc., 5602 E. Monte Rosa, Phoenix, Ari.
(See advertisement on page 56)

Stelma, Inc., 200 Henry St., Stamford, Conn. DAvis 4-7561

Sterling Precision Corp., Instrument Div., 5 Sincsink Drive East, Port Washington, N. Y. PO 7-8200

Sterling Transformer Corp., 297 No. 7th St., Brooklyn 11, N. Y. STagg 2-4200

Stevens Mfg. Co., Inc., P.O. Box 1007, Mansfield, Ohio TUxedo 4-1311

Stevens Mfg. Co., George, Inc., 6032 N. Rogers Ave., Chicago 46, Ill. JU 8-1300

Stevens-Arnold Inc., 7 Elkins St., So. Boston 27, Mass. ANdrew 8-1170

Stewart, M. C., Ashburnham, Mass. FAlbot 7-5840

Stewart Corp., F. W., 4311-13 No. Ravenswood Ave., Chicago 13, Ill. GRaceland 2-6600
(See advertisement on page 199)

Stewart-Warner Corp., 1826 Diversey Pkwy, Chicago 14, Ill. LAkeview 5-6000

Stiehl Co., Herman, Inc., 27 Park Place, New York 7, N. Y. REctor 2-8163
(See advertisement on pages 57, 105, 111)

Stocker & Yale, Inc., 40 Green St., Marblehead, Mass. NEptune 1-0038

Stoddart Aircraft Radio Co., Inc., 6644 Santa Monica Blvd., Hollywood 38, Calif. HOllywood 4-9292

Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.

Stow Mfg. Co., Inc., 442 State St., Binghamton, N. Y. RA 3-6411

Strahman Valves, Inc., Nicolet Ave., Florham Park, N. J. FH-7-4900

Strand Engineering Co., 1354 North Main Street, P.O. Box 76, Ann Arbor, Mich. NOrmandy 2-3127

Stratos Div.-Industrial Products Branch-Fairchild Engine & Airplane Corp., Route 109, West Babylon L. I., N. Y. MOhawk 5-0100

Rep—So. Ohio, So. Indiana, Kentucky
The Isaacs Co.
2708 Vine St., Cincinnati 19, Ohio. PLaza 1-2414
2676 Salem Ave., Dayton 6, Ohio.
CHestview 5-6141

Pittsburgh and Buffalo Representatives
M. S. Jacobs & Associates, Inc.
810 Noblestown Rd., Pittsburgh 5, Pa. WA-2-4212
1807 Elmwood Ave., Buffalo 7, N. Y. TR-3-3229

Texas-Louisiana Representative
Esch and Associates, Inc.
108 Portwood, Houston 11, Texas
WAlnut 8-3357

Streeter Amet Co., Slusser & Wicks, Grayslake, Ill. Baldwin 3-4801

Stretch Wire Corp., P. O. Box 893, New Rochelle, N. Y. NE 6-6900

Stromberg-Carlson Div. of General Dynamics Corp., 100 Carlson Road, Rochester 3, N. Y. HUbbard 2-2200

West Virginia Representative
Electronic Specialty Co.
Delaware Ave. at Randolph St., Charleston 2, W. Va. DIckens 3-5656

Stromberg-Carlson-San Diego, 1895 Hancock St., P.O. Box 2449, San Diego 12, Calif. BR-6-2911

Stromberg Div.—General Time Corp., 135 So. Main St., Thomaston, Conn. ATlas 2-5881

Strong Electric Corp., 87 Park Avenue, Toledo 1, Ohio CHerry 8-3741

Struthers—Dunn, Inc., Lambs Road, Pitman, N. J. LUther 9-7500

Studebaker Hydraulic Products Co., 2511 St. Charles Road, Bellwood, Ill. LInden 7-7753

Sturrup, Inc., 50 Silver St., Middletown, Conn. DI 6-9681

Sturtevant Co., P. A., Addison, Ill. TErrace 4-2900
(See advertisement on page 205)

Stylograph Corp., 205 W. Main St., Rochester 14, N. Y. LOcust 2-9470

Summers Gyroscope Co., 2500 Broadway, Santa Monica, Calif. EXbrook 3-6711 UPton 0-7437

Sunnen Products Co., 7910 Manchester Ave., St. Louis 17, Mo. STerling 1-2100

Sunshine Scientific Instrument, 1810 Grant Ave., Philadelphia 15, Pa. OKehard 3-5800

Superior Electric Co., 83 Laurel St., Bristol, Conn. LUdlow 2-9561

Superior Flux & Mfg. Co., 1536 St. Clair Ave., Cleveland 14, Ohio. SU-1-9372

Superior Tube Co., Box 191, Norristown, Pa. BRoadway 5-2070

Superite Instrument Corp., 7 Mayflower Pl., Floral Park, N. Y. Floral Park 4-2520

Surface Checking Gage Co., 5880 Hollywood Blvd., Hollywood 28, Calif. HOllywood 32518

Surprenant Mfg. Co., 172 Sterling St., Clinton, Mass. EMpire 5-6331

Swam Electric Co., Inc., 111 York Street, Hanover, Pa. MElrose 7-3821

Swartwout Division, Crane Co., Hooksett Industrial Park, Manchester, N. H. NAtional 5-9685

Swiss American Jewel Bearings Co., 42 Cherry Lane, Floral Park, L. I., N. Y. HUnter 8-2600

Swiss Jewel Co., Lafayette Bldg., Philadelphia 6, Pa. WA 5-2867

Switchcraft, Inc., 5555 N. Elston Ave., Chicago 30, Ill. SPring 4-1515

Switzer Brothers, Inc., 4732 St. Clair Ave., Cleveland 3, Ohio EXpress 1-7070

Sylvania Semiconductor Division, 100 Sylvan Road, Woburn, Mass. WEllis 3-3500

Synchro-Start Products, Inc., 8151 N. Ridgeway Ave., Skokie, Ill. OR 3-7730
(See advertisement on page 184)

Synthane Corp, 5 River Road, Oaks, Pa. GLendale 2-2211

Syntron Co., 702 Lexington Ave., Homer City, Pa. GRidley 9-8011

Syracuse Electronics Corp., False Drive, Industrial Park, Syracuse, N. Y. GLenview 4-4486

System Analyser Corp., 700 W. State, Nokomis, Ill. 52

Systematics, Inc., 10 East 40th St., New York 16, N. Y. LExington 2-8181

Systron Corp., 950 Galindo St., Concord, Calif. MU 2-3650

Sylvania Electronic Systems, A Div. of Sylvania Electric Products Inc., 63 Second Ave., Waltham 54, Mass. TWinbrook 4-9770

Systron-Donner Corp., 950 Galindo St., Concord, Calif. MU-2-8161

T

TA Mfg. Corp., 4607 Alger St., Los Angeles 39, Calif.

Taber Instrument Corp., 111 Goundry St., North Tonawanda, N. Y. LUdlow 2626

Taft-Peirce, Mfg. Co., 32 Mechanic Ave., Woonsocket R. I. POplar 2-1000

Tagliabue Mfg. Co., 87 Sewell St., Hempstead, L. I., N. Y. IVanhoe 3-4770

Taller Cooper Div., American Electronics Inc., 75 Front St., Brooklyn 1, N. Y. ULster 8-0500

Tally Register Corp., 1310 Mercer St., Seattle 9, Wash. MAin 4-0760

Tapco Group., Thompson Ramo Wooldridge Inc., 23555 Euclid Ave., Cleveland 17, Ohio. IV 1-7500

Taper Micrometer Corp., 100 Grove St., Worcester, Mass. PLeasant 6-6950

Tapeswitch Corp., of America, 229-24 Linden Blvd., Cambria Heights 11, N. Y. Fieldstone 1-4089

Taurus Corp., 8 Coryell St., Lambertville N. J. EXpert 7-1570

Taylor & Co., W. A., 7300 York Rd., Baltimore 4, Md. VA 3-1573

Taylor Dynamometer & Machine Co., 6411 River Parkway, Milwaukee 13, Wis. BL 8-9015

Taylor Electric Inc., 15400 Dale, Detroit 23, Mich. KEnwood 5-2500

Taylor Fibre Co., Box 471, Norristown, Pa. GLendale 2-2811

Taylor Instrument Companies, 95 Ames St., Rochester 1, N. Y. BEverly 5-5000

Techabilt Corporation, 905 Air Way, Glendale 1, Calif. CHapman 5-7521
(See advertisement on page 185)

Technic, Inc., 88 Spectacle St., Cranston 10, R. I. STuart 1-6100

Technical Apparatus Builders, 109 E-Liberty St., New York 6, N. Y. REctor 2-6249

Technical Appliance Corp., 1 Taco St., Sherburne, N. Y. OKehard 4-2211

Technical Associates, 140 W. Providencia Ave., Burbank, Calif. Victoria 9-5839

Tecfinical Material Corp., 709 Fenimore Road, Mamaroneck, N. Y. OWens 9-4800

Technical Measurement Corp., 441 Washington Ave., North Haven, Conn. CEdar 9-2581

Technical Service Corp., 917-19 S. Third St., Louisville 3, Ky. JUniper 7-8476

Technique Associates, Div. of Duncan Electric Co., 1413 N. Cornell Ave., Indianapolis 2, Ind. ME-1-4964

Techni-Rite Electronics, Inc., 761 Park Ave., P.O. Box 3575, Providence 10, R. I. HOpkins 7-7700

Technitrol Engineering Co., 1952 E. Allegheny Ave., Philadelphia 34, Pa. GA-6-9105

Technology Instrument Corp., 531 Main St., Acton, Mass. COlonial 3-7711

Technology Instrument Corporation of California, 850 Lawrence Dr., Newbury Park, Calif. HUdson 8-2165

Tech-Ohm Resistor Corp., 36-11 33rd Street, Long Island City 6, N. Y. STillwell 6-2274-5

Techron Corp., 20 Simmons St., Boston 20, Mass. HIghlands 5-2150

Tejax Engineering Corp., 180 Weeden St., P.O. Box 348, Pawtucket, R. I. PAwtucket 5-6788

Tektronix, Inc., P. O. Box 500, Portland 7, Ore CYpress 2-2611

Telechrome Mfg. Corp., 28 Ranick Dr., Amityville, N. Y. LI-1-3600

Telecomputing Corp., Data Instruments Div., 12838 Saticoy St., North Hollywood, Calif. PO 5-8160

Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y. YEllowstone 2-8600

Tele-Dynamics Division, American Bosch Arma Corp., 5000 Parkside Ave., Philadelphia 31, Pa. TRinity 8-3000

Telerad Manufacturing Corp., 1440 Broadway, New York 18, N. Y.

Teletype Corp., 5555 West Touhy Ave., Skokie, Ill. COrnelia 7-6700

Tel-Instrument Electronics Corp., 728 Garden St., Carlstadt N. J. WE-3-1600

Teller Co. P.O. Box 989, Butler, Pa.

Telonic Engineering Corp., P.O. Box 277, 773 Broadway, Laguna Beach, Calif. HYatt 47581, 60 North 1st Ave., Beech Grove, Indiana STate 7-7241

Tel-Tru Manufacturing Co. Div. of Gormanow-Simon Machine Co., Inc., 408 St. Paul St., Rochester 5, N. Y. HA-6-6757
(See advertisement on page 69)

Temperature Engineering Corp., 3000 Union Landing Rd., Riverton, N. J. TAlmadge 9-3880

Tempil Corp., 132 W. 22nd St., N. Y. 11, N. Y. ORegon 5-6610

Tempo Instrument Inc., Commercial St., P.O. Box 338, Hicksville, N. Y. OVerbrook 1-2280

Tenney Engineering Inc., 1090 Springfield Rd., Union, N. J. MU 6-7070
(See advertisement on page 25)

Tensitron, Inc., 124-128 Harvard Depot Rd., Harvard, Mass. GLadstone 6-3511
(See advertisement on page 232)

GLadstone 6-3511

SAXL
TENSION METERS
Quick Trigger Action*
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American made and serviced, always reliable
TENSITRON, INC., Harvard, Mass.
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Tensolite Insulated Wire Co., Inc., West Main St., Tarrytown N. Y. MEdford 1-2300

Testing Machines Inc., 72 Jericho Turnpike, Mineola, L. I., N. Y. PI 7-7466

Tetrad Co. Inc., 62 St. Mary St., Yonkers N. Y. YOnkers 3-1474

Texas Div., Clevite Corp., 9820 So. Main St., Houston 25, Tex. MO 7-2425

Texas Instruments Inc., 13500 North Central Expressway, Dallas, Texas ADams 5-3111
(See advertisement on pages 96, 97)

Texas Nuclear Corp., Box 9267, Austin 17, Tex. GI 2-7288

Thayer Scale Corp., 1 Thayer Park, Hanover, Pembroke, Mass. TAylor 6-2371

Thermal American Fused Quartz Co., 15-19 Salem St., Dover, N. J. FOxcroft 6-2807

Thermal Controls, Inc., 41 River Road, North Arlington, N. J. WYman 8-8080

Thermax Wire Corp., 304 E. 45th St., New York 17, N. Y. MU-8-8648

Thermco Instrument Corp., U. S. 20, LaPorte, Ind. Telephone 5158
(See advertisement on page 33)

Thermo Electric Co. Inc., 109 5th St., Saddle Brook, N. J. HUbbard 9-5800
(See advertisement on pages 52, 62, 63, 100, 182, 186, 232)

Thermo Electric Mfg. Co., P.O. Box 697, Dubuque, Iowa. Telephone 3-3501

Thermo-Fax Div., Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn. PRospect 6-8511

Thermo Products Co. Inc., 3727 No. Palmer St., Milwaukee 12, Wis. LOcust 2-5800

Thermometer Corp. of America, 70 W. Columbia St., Springfield, Ohio FA-5-4747

Thermo Electric Co., Inc., Saddle Brook, N. J. - Aircraft and industrial thermocouples, thermocouple wire and accessories; pyrometers, temperature controllers, indicators, recorders, monitoring systems, connector panels, resistance bulbs

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Castle 2-3368

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MacGuire Instrument Company
Emerson 6-3454

CHICAGO 46, ILLINOIS
Thermo Electric Co., Inc.
Newcastle 1-7332

CINCINNATI 37, OHIO
Thermo Electric Co., Inc.
Valley 1-8875

CLEVELAND 28, OHIO
D. F. Barringer
Regent 4-3420

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Wright Industrial Products
Taylor 4-2571

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James B. Drummond Company
Spruce 7-6748

DETROIT, MICHIGAN
H. H. Barnum Company
Kenwood 1-7504

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Jackson 3-5651

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Thermo Electric Co., Inc.
DIckens 5-1480
TRiangle 3-4244

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Longacre 4-2560

PHILADELPHIA 4, PA.
Arobone and Cline
Evergreen 2-6520

PITTSBURGH 21, PA.
Thermo Electric Co., Inc.
Churchill 1-1200

SADDLE BROOK, N. J.
Thermo Electric Co., Inc.
Hubbard 9-5800

ST. LOUIS 22, MO.
E. B. Miller Co.
Yorktown 6-8250

SAN FRANCISCO 3, CALIF.
California Instrument Company
Underhill 3-0350

SEATTLE 2, WASH.
G. O. Carlson Company
East 4-8347

WASHINGTON, D. C.
Arobone and Cline
Juniper 8-2425

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CANADA

BRAMPTON, ONTARIO
Thermo Electric (Canada) Ltd.
Glendale 1-0813

CALGARY, ALBERTA
Thermo Electric (Canada) Ltd.
Amherst 2-7077

MONTREAL (POINTE CLAIRE), QUE.
Aeromotive Engineering Products Ltd.
Oxford 7-0810

NORTH VANCOUVER, B. C.
Northern Columbia Process Equipment Ltd.
Yukon 7-5711

Theta Instrument Corp., 520 Victor St., Saddle Brook, N. J. HUbbard 7-3508

Thomas & Betts Co., Inc., 36 Butler St., Elizabeth 1, N. J. Elizabeth 4-4321

Thomas Engineering Inc., D. W., 367 W. 7th St., San Pedro, Calif. TErminal 1-1206

Thomas & Skinner, Inc., 1120 East 23rd Street, Indianapolis 7, Ind. WAlnut 3-2501

Thompson Clock Co., H. C., 38 Federal St., Bristol, Conn. LUdlow 2-3186

Thompson-Ramo-Wooldridge Products Co., Div. of Thompson Ramo Wooldridge, Inc., 202 N. Canon Dr., Beverly Hills, Calif. BRadshaw 2-8202

Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J. PI-3-7797

Tiffen Optical Co., 71 Jane St., Roslyn Heights, L. I., N. Y. MAyfair 1-2700
(See advertisement on page 170)

Tigerman Engineering Co., 4332 N. Western Ave., Chicago 18, Ill. IR 8-9041
(See advertisement on page 38)

Times Facsimile Corp., 540 W. 58th St., New York 19, N. Y. JUdson 2-3030

Times Wire & Cable Co., 358 Hall Ave., Wallingford, Conn. COlony 9-5391

Tinius Olsen Testing Machine Co., Easton Road, Willow Grove, Pa. OSborne 5-7100

Tinsley Laboratories, Inc., 2528 Grove St., Berkeley 4, Calif. TH-3-6263
(See advertisement on pages 138, 168)

Tipptronic, Inc., 510 E. Washington Street, Chagrin Falls, Ohio CHestnut 7-7773

Tobe Deutschmann Corp., 921 Providence Hwy., Norwood, Mass.

Toledo Scale, Div. of Toledo Scale Corp., Toledo 12, Ohio GReenwood 4-5411

Toroid Unlimited Inc., 3830 Terrace St., Philadelphia 28, Pa. IV-2-7178

Torrington Company, 59 Field Street, Torrington, Conn. HUnter 2-4441

Torsion Balance Co., 35 Monhegan St., Clifton, N. J. GRegory 3-6900

Torwico Electronics, Inc., 1090 Morris Ave., Union, N. J. EL-4-5650

Traceriab Inc., 1001 Trapelo Road, Waltham 54, Mass. TW-4-6600

Trad Electronics Corporation, 1001 First Avenue, Asbury Park, N. J.

Traid Corp., 17136 Ventura Blvd., Encino, Calif. TRiangle 3-3373

Trak Electronics Co., Division of CGS Laboratories, Inc., 59 Danbury Road, Wilton, Conn. PO-2-5531

Transformers, Inc., 200 Stage Road., Vestal, N. Y. PIoneer 8-3311

Transistor Applications, Inc., 103 Broad St., Boston 10, Mass. HA-6-1794 HA-6-1795

Transistor Electronics Corp., 3357 Republic Ave., Minneapolis 26, Minn. WE-9-6754

Transistor Specialties, Inc., Terminal Drive, Plainview, N. Y., WElls 5-8700

Transitron Electronic Corp., 168 Albion St., Wakefield, Mass. CRystal 9-4300
(See advertisement on page 235)

Trans-Sil Corporation, 21 New St., Englewood, N. J. LOwell 7-1720

Trans-Sonics, Inc., P.O. Box 328, Lexington 73, Mass. BRowning 2-1000

Trent, Inc., 301-299 Leverington Avenue, Philadelphia 27, Pa. IVyridge 2-5090

Trenton Transformer Corp., P.O. Box 568, Trenton 2, N. J. OWen 5-3451

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Tri-Dex Co., P.O. Box 1207, Lindsay, Calif. LIndsay 2-4051

Trimount Instrument Div., General Controls Co., 8040 McCormick Blvd., Skokie, Ill. IR 8-2323

Triner Scale and Manufacturing Co., 2714 W. 21st St., Chicago 8, Ill. BIshop 7-7538

Trinity Equipment Corp., Route #281, Cortland, N. Y. SKyline 6-7515
(See advertisement on pages 16, 84)

Trio Laboratories, Inc., Dupont Drive, Plainview, L. I., New York. OVerbrook 1-0400

Triplett Electrical Instrument Co., Harmon Road, Bluffton, Ohio, Telephone 3231

Tri-R Instruments, 144-13 Jamaica Ave., Jamaica 35, N. Y. JAmaica 3-0041
(See advertisement on page 95)

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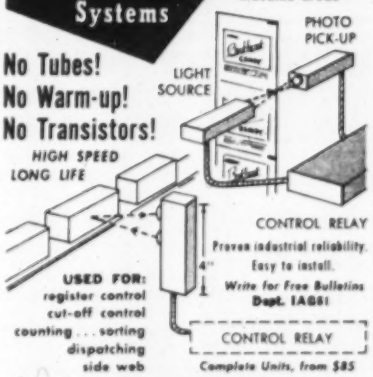

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Tucor Incorporated, 18 Marshall Street, So. Norwalk, Conn. TEmple 8-7591

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Ucinite Company, 459 Watertown Street, Newtonville 60, Mass. LA-7-8400

Uehling Instrument Co., 473 Getty Ave., Paterson 3, N. J. SHerwood 2-8710
(See advertisement on page 238)

Ulanet Company, George, 419 Market St., Newark, N. J.
(See advertisement on page 70)

Ultek Corp., 920 Commercial St., Palo Alto, Calif. DA-1-4117

Ultradyne, Inc., 2630 San Mateo, N. E., Albuquerque, N. Mex. AMherst 8-2431

Ultrasonic Industries Inc., 141 Albertson Ave. Albertson, N. Y. PIoneer 1-4333
(See advertisement on page 121)

Ultra-Violet Products, Inc., 5114 Walnut Grove Ave., San Gabriel, Calif. CUmberland 3-3193

Ultronix, Inc., 111 East 20th Ave., San Mateo, Calif. FIreside 5-7921

Uperti Optical Co., John, 3551-55 East St., Pittsburgh 14, Pa. FA 1-22 5
(See advertisement on page 165)

Ungar Electric Tools, Electronic Div. of Eldon Industries Inc., 4101 Redwood Ave., Los Angeles 66, Calif. EXmont 8-5718

Unholtz-Dickie Corp., 2994 Whitney Ave., Hamden 18, Conn. ATwater 8-3358
(See advertisement on page 84)

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(See advertisement on page 179)

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(See advertisement on page 74)

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(See advertisement on pages 159, 160)

Valverde Laboratories, 252 Lafayette Street, New York 12, N. Y. WA-5-6742

Vanguard Instrument Corp., 20 W. Centennial Ave., Roosevelt, L. I., N. Y. FReeport 8-8070

Van Products Co., 5755 Swanville Road, Erie, Pa. TEmple 3-5556

Van Norman Industries Inc., Electronics Div., 186 Granite St., Manchester N. H. NAtional 5-9701

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Vari-L Co. Inc., 207 Greenwich Ave., Stamford, Conn. FIreside 8-0091

Varo Mfg. Co. Inc., 2201 Walnut St., Garland, Texas BRoadway 6-6141

Vector Electronic Co., 1100 Flower St., Glendale 1, Calif. CH 5-10/6
(See advertisement on page 185)

Vectrol Engineering Inc., P.O. Box 1089, Stamford, Conn., DAvis 4-4602

Vee-Arc Corp., 50 Milk St., Westboro, Mass. FOrest 6-4451

Veeco Vacuum Corp., 86 Denton Ave., New Hyde Park, L. I., N. Y. Pioneer 6-1161

Veeder-Root Inc., 70 Sargeant St., Hartford 2, Conn. JA 7-7201
(See advertisement on page 91)

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(See advertisement on pages 38, 39, 41, 44)

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Waltham Precision Instrument Co., 221 Crescent St., Waltham 54, Mass. TWinbrook 3-4000

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Waukesha Motor Co., St. Paul Ave., Waukesha, Wis. LIberty 7-2311

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Waveline, Inc., P.O. Box 718, Passaic Ave., W. Caldwell, N. J. CApital 6-9100

Waxon-Carhoff, Inc., 8 Commercial St., Rochester 14, N. Y. HA-6-1240
(See advertisement on page 154)

Wayne-George Corp., 583 Commonwealth Avenue, Boston, Mass. CO-7-8425

Weatherhead Co., Ft. Wayne Div., 128 W. Washington Blvd., Ft. Wayne, Ind. E-8055

Webber Engineering Corp., P.O. Box 217, Indianapolis 6, Ind. MElrose 2-1378

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(See advertisement on page 192)

Weighing & Controls Inc., Industrial Park, E. County Line Rd., Hatboro, Penna., OSborne 5-2001
(See advertisement on page 34)
Pittsburgh Representative
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810 Noblestown Rd., Pittsburgh 5, Pa.
WAlnut 2-4212

Weinschel Engineering, 10503 Metropolitan Ave., Kensington Md. LOckwood 4-0122

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(See advertisements on pages 43, 63)

Welch Electric Co., 1221 Wade St., Cincinnati 14, Ohio. MAin 1-7122

Welch Manufacturing Co., W. M., 1515 Sedgwick St., Chicago 10, Ill. MIchigan 2-2000

Weldmatic Div. of Unitek Corp., 950 Royal Oaks Drive, Monrovia, Calif. ELliot 9-8361

Weller Electric Corp., 601 Stone's Crossing Road, Easton, Pa. BLackburn 3-3521

Wells Electronics Co., 1701 S. Main St., South Bend 23, Ind. AT-8-4851

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Westberg Mfg. Co., Box 239, Napa, Calif. BAldwin 6-5218

Western Apparatus Co., Div. of Comptometer Corp., 2001 Greenleaf, Evanston Ill., UNiversity 9-9580

Western Design, Div. of U. S. Industries, Inc., Santa Barbara Airport, Goleta, Calif. WOodland 7-4371

Western Devices, Inc., 800 W. Florence Ave., Inglewood, Calif.
(See advertisement on page 171)

Western Electronics Products Co., 2420 No. Lake Ave., Altadena, Calif. SYcamore 4-6379
(See advertisement on page 236)

NEW MODEL G THERMAL WIRE STRIPPER

Strips both Teflon and low-melting plastics.
No blades to cut or nick wire.
Has continuously-variable heat control.
Strips any size wire without adjustment.
Use either as bench or hand tool.
Designed for production-line use.
Price $69.50 FOB Altadena, Calif.
Always available from stock.

Western Electronic Products Co.
2420 North Lake Avenue, Altadena, Calif.
CIRCLE 393 ON READER-SERVICE CARD

Western Gear Corp., Electro Products Div., 132 W. Colorado St., Pasadena, Calif. BR-26489

Western Insulated Wire Co., 2425 E. 30th St., Los Angeles 58, Calif. LUdlow 7-7103

Western International Co., 45 Vesey St., New York 7, N. Y. Digby 9-2275
(See advertisement on page 150)

Western Radiation Laboratory, 1107 W. 24th St., Los Angeles 7, Calif. REhmond 7-8355

Westinghouse Air Brake Co., Industrial Products Div., P.O. Box 36, Wilmerding, Pa. BRandywine 1-1490

Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.

Westinghouse Electric Corp., Director Systems Dept., 356 Collins Ave., Pittsburgh 6, Pa. EM 2-2500

Westinghouse Electric Corp., Electronic Tube Div., P.O. Box 284, Elmira, N. Y. RE-9-3611

Westinghouse Electric Corp., General Purpose Control Dep't, 4454 Genesee St., Buffalo 5, N. Y. PL-1500

Westinghouse Electric Corp., Instrument & Control Systems, Newark 1, N. J. HUmboldt 4-2000
Representative—S. Calif., Ariz., N. Mex.
DynaSales Company
1226 S. Atlantic Blvd., Los Angeles 22, Calif. Angelus 8-1175

Westinghouse Electric Corp., Lamp Div., MacArthur Ave., Bloomfield 7, N. J. HUmboldt 4-2000

Westinghouse Electric Corp., Power Control & Communications Dept., 700 Braddock Ave., East Pittsburgh, Pa. EXpress 1-2800

Westinghouse Electric Corp., Semiconductor Dept., Youngwood, Pa. WA 5-7272

Westline Products Div. of Western Lithograph Co., 800 E. 2nd St., Los Angeles 54, Calif. MAdison 7-2641

Weston Hydraulics Ltd., Sub. of Borg-Warner Corp., 7500 Tyrone Ave., Van Nuys, Calif. TRiangle 3-4340

Westronics, Inc., 3605 McCart St., Ft. Worth, Texas. WA 3-8211

Wheelco Instruments Div., Barber-Colman Co., 1300 Rock, Rockford, Ill. WO 8-6831

Wheeler Electronic Corp., Subsidiary of Sperry Rand Corp., 150 E. Aurora St., Waterbury 20, Conn. PLaza 4-5191

Wheeler Manufacturing Co., C. H. 19th & Lehigh Ave., Philadelphia 32, Pa. HAldwin 8-6500

Wheelock Signals, Inc., 273 Branchport Ave., Long Branch, N. J. CApital 2-6880

White Avionics Corp., Terminal Drive, Plainview, N. Y. WElls 5-5511

White Dental Mfg. Co., S. S., Industrial Div., 10 East 40th St., New York 16, N. Y. MU-3-3015

White Instrument Laboratories, P.O. Box 9006, Allandale Station, Austin 17, Tex. GLendale 3-8447

Whitey Research Tool Co., 5525 Marshall, Oakland 8, Calif.

Whitney Blake Co., 1537 Dixwell Ave., New Haven 14, Conn. CHestnut 8-5515

Wiancko Engineering Co., 255 Halstead Ave., Pasadena, Calif. EL-5-7186

Wickes Engineering & Construction Company, 12th St. & Ferry Ave., Camden 4, N. J. WOodlawn 4-4912

Wiedemann Machine Co., King of Prussia, Pa. BRoadway 9-1120

Wilcolator, 1001 Newark Ave., Elizabeth, N. J. ELizabeth 4-1000

Wilkerson Corp., 1601 W. Girard Ave., Englewood, Colo. SUnset 1-7801
Rep—So. Ohio, So. Indiana, Kentucky
The Isaacs Co.
2704 Vine St., Cincinnati 19, Ohio. PLaza 1-2414
2676 Salem Ave., Dayton 6, Ohio. CHestview 5-6141

Will Corporation, 39 Russell St., Rochester 3, N. Y. BRowning 1-8200

Williams Apparatus Co., Inc., Herald Bldg., Watertown, N. Y. SU 2-3420

Wilmington Fibre Specialty Co., New Castle, Del. EAst 8-7525

Wilrite Products, Inc., 2835 West 150th St., Cleveland 11, Ohio, CLearwater 2-1810

Wilson & Co., G. C., 1915 8th Ave., Huntington W. Va. JA 3-5149

Wincharger Corp., East 7th & Division Sts., Sioux City 2, Iowa 2-1844

Winchester Electronics, Inc., Willard Road, Norwalk, Conn. VIctor 7-7231

Wire, Inc., J. H., 820 Washington Street, Winchester, Mass. PA-9-4400
(See advertisement on page 175)

Winslow Co. Inc., Dept. 1 P, 701 Lehigh Ave., Union, N. J., MUrdock 8-0020

Winston Electronics, 4000 N. W. 28th St., Miami 42, Fla. NE-3-2505

Wittee Electronics, Inc., 53 Water St., So. Norwalk, Conn. TEmple 8-7551

Wollensak Optical Co., 850 Hudson Ave., Rochester 22, N. Y. COngress 6-1000

Wood Electric Co., Inc., 244 Broad St., Lynn, Mass. LY-8-5313

Wood, N., Counter Laboratory, 1525 E. 53rd St., Chicago 15, Ill. FAirfax 4-1114

Worchester Valve Co., Inc., Worcester 10, Mass.

Worden Labs., 695 Rocky River Rd., Houston 27, Tex. MA-3-5177

Worley Jewel Co., John., North Falmouth, Mass. LOcust 3-3972
(See advertisement on page 165)

Worner Electronic Devices, 10 Main St., Rankin 1, Ill. EXport 7-4555

Wright Machinery Co. Div., Sperry Rand Corp., Calvin and Holloway Sts., Durham, N. C. Telephone 2-8161

Wurlitzer Co., Niagara Falls Blvd., North Tonawanda, N. Y. LUdlow 2500

Wyle Manufacturing Corp., 140 Washington St., El Segundo, Calif. EAstgate 2-0659

Y

Yardney Electric Corp., 40-50 Leonard St., New York 13, N. Y. WOrth 6-3100

Yarnall-Waring, 102 E. Mermaid Lane, Philadelphia 18, Pa. CH-8-2600
(See advertisement on page 48)

Yellow Springs Instrument Co., P.O. Box 106, Yellow Springs, Ohio ROskwell 7-7242
(See advertisement on page 237)

YSI MODEL 71 THERMISTOR BASED TEMPERATURE CONTROLLER

Dial the Temperature Which You Wish To Control

FROM −6°C TO +124°C

Dial Settability - - - - - ± .5C
Fine Control Settability - ± .01C
Probe Sensitivity - - - - - ± .05C
Control Load - - - - - - 20 AMP

PRICE $155.00

COMPLETE INFORMATION ON REQUEST

YELLOW SPRINGS INSTRUMENT CO.
P. O. Box 106-A
YELLOW SPRINGS, OHIO
CIRCLE 394 ON READER-SERVICE CARD

Yokogawa Electric Works, Inc., 40 Worth St., New York 13, N. Y. BEekman 3-6-20
(See advertisement on pages 110, 120)

Z

Zagora Gear Products Inc., 1327 S. Mint St., Box 3367, Charlotte 3, N. C. ED-37111

Zeiss, Inc., Carl, 485 Fifth Ave., New York 17, N. Y.
(See advertisement on pages 141, 142)

Zenith Electric Co., 152 W. Walton St., Chicago 10, Ill. MI-2-3322
(See advertisement on page 72)

Zenith Mfg. & Chemical Corp., 82 Beekman St., New York 38, N. Y. WOrth 2-5787

Zenith Optical Laboratory, 1940 Great Neck Rd., Copiague, L. I., New York. Amityville 4-4616

Zernickow Co., O., 15 Park Row, New York 38, N. Y. BArclay 7-2264
(See advertisement on page 57)

Zero-Max Co., 1904 Lyndale Ave., So., Minneapolis 5, Minn. FRanklin 4-5520

Zippertubing Co., 752 S. San Pedro St., Los Angeles 14, Calif. MAdison 4-6664

Zoomar, Inc., 55 Sea Cliff Ave., Glen Cove, L. I., N. Y. ORIole 6-1900

Zophar Mills, Inc., Dept. X, 112-26th St., Brooklyn 32, N. Y. SOuth 8-0907

Electronic Circuitry for Instruments and Equipment

by M. H. Aronson. "Comprehensive source book on instrument circuitry," this complete home-study text includes 458 multiple-choice questions (and answers), 215 illustrations, 10 tables, comprehensive index. Paperbound, 324 pages, 1957 (revised edition). **$2.00**

100 Electronic Circuits

by M. H. Aronson and C. F. Kezer . . . covers amplifiers, oscillators, pulse circuits, phase shifters, etc. Complete with all circuit component values and response specifications. Paper, 180 pages, 1957. **$2.00**

Printed Circuitry

by Allan Lytel. A valuable working tool; includes alternative and recommended practice for each step in design and production of printed circuits; a buyer's guide to special components; and "how to" service data. Paperbound, illustrated, 192 pages, 1957 **$2.00**

Maintenance and Servicing of Electrical Instruments

by James Spencer. Useful to all instrument users, service men, switchboard attendants testing engineers, and others, this book covers construction, testing, applications, principles of operation and maintenance of all kinds of electrical indicating instruments. Clothbound, 274 illustrations, 280 pages, 1951 (third edition). **$2.00**

Strain Gage Instrumentation

edited by Aronson and Nelson. " . . . a practical text . . . covers fundamentals, basic bridge circuits, typical applications, and surveys typical commercial instruments which use or are used with strain gages." Paper, 110 pages, illustrated, indexed by company, author, and subject, 1958. **$2.00**

Nuclear Reactors for Industry and Universities

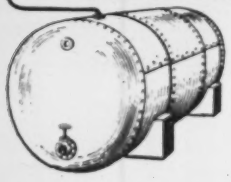
edited by E. H. Wakefield. The several distinguished authors and editor Wakefield cover types, availability (1954), operation, protection, control, experiments, legal aspects, and present a detailed cost study. Cloth, 92 pages, illustrated, 1954. **$2.00**

Instruments Publishing Co.
845 Ridge Avenue
Pittsburgh 12, Pennsylvania

UEHLING INSTRUMENT COMPANY

473 Getty Avenue, Paterson 3, New Jersey
Recording, Indicating and Control Apparatus

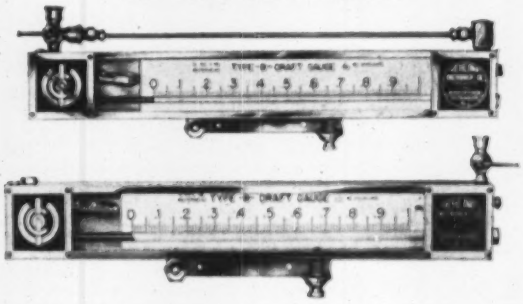
UEHLING TANK-O-METER



FOR MEASURING
LIQUID LEVELS
AND
TANK CONTENTS
ANY DISTANCE AWAY

TANK-O-METERS may be applied to the measurement of ACIDS, ALKALIS, WATER, OIL, GASOLINE, ALCOHOL, BEVERAGES, TAR, MOLASSES, MILK, PAINTS, VARNISHES, SODIUM SILICATE, SOLVENTS, OR ANY OTHER CHEMICAL SOLUTION. *Send for Bulletin No.* 945.

INCLINED DRAFT GAUGES
For Plus or Minus Pressure
For Differential Pressure



The Uehling Draft Gauges are available with scales from 10" to 70" and waterheads ranging from 1" to 14". Scales are graduated for every 1/100" of waterhead. Each instrument is housed in a durable aluminum case with glass front and adjustable scale. They are extremely accurate as each instrument is individually calibrated. Furnished for draft, pressure, or differential pressure. *Send for Bulletin* 1146.

U-TUBES (STRAIGHT TUBE TYPE)

Uehling U-Tube Pressure and Vacuum Gauges consist of straight Pyrex tubes with a bottom metal connecting base, housed in aluminum case with glass front.

Each instrument has an external micrometer scale adjustment, zero check cock, and drain valve.

Scale lengths from 10" to 100".

Four indicating fluids.

Special calibration on request.

Send for Bulletin 828.

TEL-FLO METER

For measuring flow rates and purging line. Are accurate, exceptionally durable, and attractive. Housed in aluminum case with plastic front to protect graduated glass tube. Can be furnished in aluminum, brass, or stainless steel bodies (or any other metal). Suitable for maximum pressures of 300 lbs. Higher pressures upon request. Furnished with or without control valve and with either top, side, or back connection.

Send for Bulletin 553.

SPECIAL TANK-O-METERS

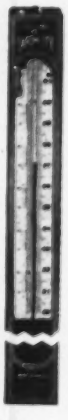
For fuming liquids, such as hydrochloric acid, nitric acid, propane, butane, ammonia, ethyl chloride, etc.

PRESSURE AND VACUUM GAUGES

Meet the most exacting requirements and combine accuracy, reliability, simplicity and durability. Housed in durable Aluminum cases with glass fronts. Standard instruments covers ranges of 7" to 100" of mercury. A catch-all for trapping visibly shows any condensate in the connecting line. Each scale has a knurled micrometer screw adjustment. A simple means is provided for cleaning the Pyrex manometer. May be calibrated in any desired units for pressure or vacuum and may be provided with a plus or minus scale to read either vacuum or pressure on the same instrument. Length to suit any range. Greater flexibility is made possible by choice of either mercury or one of three other indicating fluids.

Send for Bulletin 147.

MERCURIAL BAROMETERS

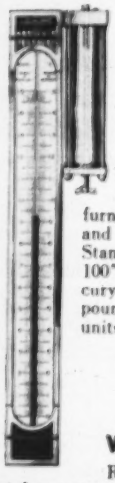


The Uehling Mercurial Barometer is furnished with a scale range of 20" to 31" of mercury graduated for every 1/10", with external vernier scale adjustment which provides readings of .01 of an inch of mercury throughout the range of 20" to 31" of mercury, or with a scale range of 500 to 780 millimeters of mercury graduated for every 1 millimeter with external vernier scale adjustment, which provides readings of .1 millimeter of mercury.

It can be furnished for flush mounting or surface mounting with or without oak panel board.

Send for Print 160.

MERCURY COLUMN ABSOLUTE PRESSURE INDICATORS



Uehling Mercury Column Absolute Pressure Gauges are designed for exacting requirements of modern engineering practice, and combine accuracy, reliability, simplicity, and durability. Used with all processes where extremely accurate absolute pressure determinations are essential. Can furnish catch-all for trapping and showing any condensate. Standard scale lengths of 7" to 100", graduated in 1/10" of mercury absolute pressure or in pounds or in equivalent metric units.

Send for Bulletin 247.

COMBINED BAROMETER AND VACUUM RECORDER

Records barometric pressure and vacuum on same chart. Distance between the two recorded lines represents the absolute pressure. Permanent accuracy and remarkable legibility are the outstanding characteristics of this recorder. Accuracy is obtained by the employment of the mercury column principle and consequently this recorder has the same high degree of accuracy as the mercury column indicator. It employs no springs, diaphragms, or multiplying levers, therefore holds its calibration permanently without readjustment.

Send for Bulletin 150.

UEHLING VACUUM RECORDER

Same as above, without barometric pen.

Send for Bulletin 140.

CIRCLE 395 ON READER-SERVICE CARD

CRESCENT ARMORED MULTITUBE

—an armored group of 2 to 37 long length tubes of the user's choice, SPIRALLY CABLED together to permit maximum bending without distortion of the tubes. Mechanical and corrosion protection is accomplished by a flexible, interlocked, metallic armor or corrosion-resistant polyvinyl chloride sheath, or combination of both. There is a type of MULTITUBE to meet your requirements and give you the best protected instrument and control tubing installation at the lowest installed cost. We are able to provide your type promptly from large factory stocks of tubing.

TYPE CA
(General Purpose)

employs SPIRALLY CABLED copper tubes covered with a vinyl insulating tape and flexible, interlocked, galvanized steel armor.

TYPE CAT

has a vinyl insulating tape over the SPIRALLY CABLED copper tubes with a flexible, interlocked, galvanized steel armor and polyvinyl chloride (PVC) thermoplastic sheath. This construction provides mechanical and corrosion protection for the tubing as well as corrosion protection for the armor. For outdoor, wet and corrosive locations.

TYPE CTA

consists of SPIRALLY CABLED copper tubes with a polyvinyl chloride (PVC) thermoplastic sheath and flexible, interlocked, galvanized steel armor. The sheath protects the tubing against corrosion and the armor protects both tubing and sheath from mechanical injury. Recommended for general outdoor use and when a high degree of mechanical protection is desired for exposed locations or during installation such as direct burial in concrete or blacktop and pulling into conduit.

TYPE CTAT

provides maximum mechanical and corrosion protection. It has a polyvinyl chloride (PVC) thermoplastic sheath over the SPIRALLY CABLED copper tubes, with a flexible, interlocked, galvanized steel armor and polyvinyl chloride (PVC) thermoplastic sheath overall. For particularly corrosive locations as in refineries and petrochemical plants.

TYPE CT

The SPIRALLY CABLED copper tubes are protected by a mylar tape and polyvinyl chloride (PVC) thermoplastic sheath that is tough, resistant to water, acids, alkalies, oils and most chemicals and will not support combustion. Recommended for use in damp or corrosive locations, in troughs or attached to sheltered building surfaces where it will not be subjected to mechanical injury.

TYPE CT-HW

similar to standard Type CT above except protected by an extra heavy wall (HW) PVC sheath for additional mechanical protection.

Plastic Coated Single Tubes, copper or aluminum should be used to give corrosion protection to all single lines up to the final tube fitting, where trouble from corrosion may occur.

CRESCENT POLYETHYLENE OR NYLON MULTITUBE

consists of 2 to 37 precision Polyethylene tubes *spirally cabled* together for greatest flexibility. The tubing assembly is protected against mechanical injury by an interlocked, galvanized steel armor, Polyvinyl Chloride sheath, or other sheaths, as below. Can also be furnished with Nylon Tubes.

STANDARD TYPES

TYPE PA

TYPE PA—Interlocked metallic armor provides complete mechanical protection.

TYPE PAT

TYPE PAT—Polyvinyl chloride sheath over the armor adds corrosion protection for the armor. Can be buried in the earth.

TYPE PT

TYPE PT—PVC sheath gives limited mechanical protection. For use in troughs, trays or conduit.

SPECIAL SERVICE TYPES

TYPE XPT-U

TYPE XPT-U—Extra heavy PVC sheath over high modulus TYPE XP tubing permits direct burial, or use above ground where subject to moderate abuse.

TYPE XPT-F

TYPE XPT-F—Same as XPT-U with heavy asbestos braid and outer PVC sheath. Provides time delay in event of flash fire.

TYPE XPT-FA

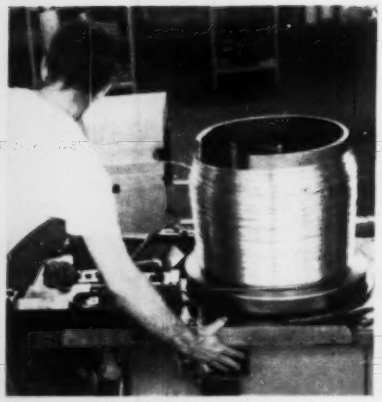
TYPE XPT-FA—Same as XPT-U with heavy asbestos braid and interlocked metallic armor. Provides complete mechanical protection, as well as time delay in event of flash fire.

WRITE FOR BULLETIN NO. 960-J

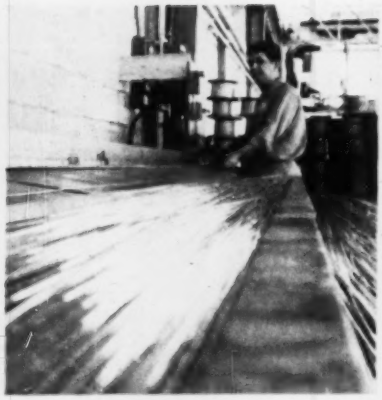
CRESCENT INSULATED WIRE & CABLE CO. INC.

TRENTON, NEW JERSEY

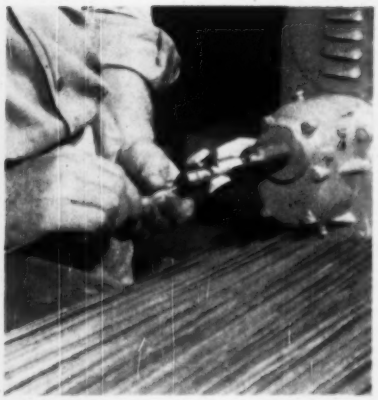
CIRCLE 396 ON READER-SERVICE CARD



PLUG DRAWING

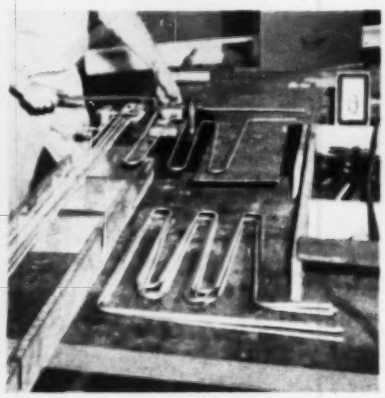


STRAIGHTENING



DEBURRING

CLEANING



FORMING

FLOW TESTING

PACKAGING

METICULOUS...

. . . is the way Webster would define Kensico's *"commendable extreme carefulness"* in producing small diameter copper tube for use in both instrumentation and control systems. At every step in production, Kensico technicians exercise the utmost care to insure that each order processed by our newly expanded Small Tube Dept. is painstakingly filled to customer's exact specifications. Kensico draws Restrictor and Capillary Tube to .026" inside diameter, cut to exact straight lengths, plastic capped and bundled—or coiled on a reel up to 10,000 feet. Free Flow Charts and engineering consultation available upon request. Write today!

Kensico Tube
COMPANY DIVISION
Robinson Technical Products, Inc.
MOUNT KISCO, NEW YORK

Kensico Products are also available through Warehouse Distributors and Sales Representatives in Cambridge, Mass.; Middlebury, Conn.; Buffalo, N. Y.; Lindenhurst, N. Y.; Goshen, N. Y.; Roselle, N. J.; Philadelphia, Pa.; Flourtown, Pa.; Pittsburgh, Pa.; Cleveland, Ohio; Detroit, Mich.; Chicago, Ill.; Evanston, Ill.; St. Louis, Mo.; Milwaukee, Wisc.; Durham, N. C.; Ft. Lauderdale, Fla.; St. Petersburg, Fla.; Dallas, Texas.

CIRCLE 397 ON READER-SERVICE CARD